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An Address
ON
THE PART OF THE PRACTITIONER IN THE TREATMENT OF THE PRE-OPERATIVE STAGE OF ENLARGED PROSTATE.*

BY
J. W. THOMSON WALKER, M.B., F.R.C.S.,
SENIOR UROLOGIST AND LECTURER ON UROLOGY, KING'S COLLEGE HOSPITAL; SURGEON TO ST. PETER'S HOSPITAL.

In surgery it is always easy to be wise after the event. Prostatic surgery supplies us with many examples of this truth, and anyone who thinks out the cause of post-operative disappointments and failures must at times regret that more care was not taken in pre-operative treatment.

The greater the experience I gain in prostatectomy the more I am impressed by the fact that many of the complications of prostatectomy are preventable by pre-operative treatment. There are complications against which no provision can give immunity. We cannot, for instance, avoid the occurrence of pulmonary embolism in a practically clean case. We cannot avoid cardiac failure which occurs days or weeks after the operation, or renal failure where the kidneys have been destroyed beyond the point of recovery. But we can prevent or modify some of the bowel complications or kidney complications and some of the other complications by careful pre-operative examination and preliminary treatment. And it is along these lines that the practitioner can do so much to help in reducing the mortality of prostatic enlargement.

The risks to which a patient suffering from enlarged prostate, whether he be submitted to operation or treated without operation, is exposed, are not confined entirely to the urinary organs. They may be arranged for discussion under different systems:

1. Gastro-intestinal risks.
2. Pulmonary risks.
3. Circulatory risks.
4. Nervous system risks.
5. Urinary risks.

Gastro-intestinal Risks.

I will first relate a case of gastro-intestinal complication following operation, and then discuss the subject.

A. S. B., aged 60, complained of frequent micturition and neuritis of the right arm. He was known to have a high blood pressure (180), and had had his teeth removed as a possible source of infection for his neuritis. There had been several attacks of retention of urine during the past two years.

He was a stout, short-necked man with a predominant abdomen. The frequency of micturition amounted to twenty minutes during the day and five or six times at night. There was urgency, hesitation at the commencement and difficulty in the act. The urine was clear, and there was about one ounce of residual urine. The urine contained only 1 per cent. of urea, but the quantity was normal. The prostate was large, elastic, movable and prominent in the rectum. The kidneys were not palpable or tender. He showed no clinical signs of uraemia. His appetite was large, and there was a tendency to constipation. Flatulent distension of the abdomen was common after meals. Apart from the enlarged prostate, bowel distension, the high blood pressure and the low urea content of the urine, nothing abnormal was discovered by two physicians at different dates.

I was uneasy about the bowel, and declined to operate until he had undergone some treatment for the flatulent distension. He improved on bowel antiseptics, but pituitary gland did not suit him. After a month I saw him again and consented to operate, although I expressed some anxiety in regard to his bowel.

On June 10th, 1920, an adenomatous prostate weighing 56 grams was removed under spinal anaesthesia with a minimal amount of general anaesthetic. Haemorrhage was very moderate, and there was no shock. Post-anaesthetic vomiting was moderate on the day of the operation, and had ceased next day. On June 11th the condition was good and much flatus was passed. The temperature was 99°. There was free drainage, the urine being stained with blood. During the day he complained of flatulence; pituitrin (½ c.cm.) gave much relief, and flatus was passed freely.

During the night June 11th–12th flatulence was very troublesome, but was relieved by the rectal tube. The temperature was 99° and the pulse 80. The complaint of flatulence continued on June 12th and 13th, but on the 14th it had disappeared and on this day the bowels moved three times after an aperient.

On June 20th he was given some indigestible food by his relations. This was followed by vomiting and abdominal distension. These symptoms continued and now dominated the clinical picture. Urine was being secreted in good quantity. On June 20th he was seen by a physician, who diagnosed intestinal obstruction, and a general surgeon was called in consultation. The surgeon, however, agreed with me that there was no obstruction or peritonitis. Vomiting continued. The stomach was washed out, with some relief.

During the next ten days the distension varied; sometimes the abdomen was tense and at other times it was fairly soft. The bowels were opened by enemata with varying results, the motions being always very offensive.

On June 26th, 27th, and 29th the temperature rose to 100° and 101°. The quantity of urine, so far as could be measured, diminished slightly, but it was 37 oz. on the 28th and 38 oz. on the 29th.

On June 25th the blood urea was examined and found to be greatly increased (370 mg. in 100 c.cm.). There were no symptoms pointing to uraemia on June 27th, but next day there was some drowsiness and a good deal of wandering. On this day (June 28th) signs of cardiac failure appeared and became increasingly evident, and recurred during June 29th, and he died on June 30th.

I have quoted this case at length as it is a good example of the type of bowel complication that is likely to be met with after prostatectomy. In this case there was an element of uraemia (due to chronic interstitial nephritis), which is absent from most of the cases I have seen.

Post-operative distension of the bowel may occur in all degrees of severity, from a slight flatulent distension with difficulty in getting the bowels moved for a few days after the operation to a prolonged distension of the bowel ending fatally from pressure on the diaphragm and interference with the heart's action. Rarely, it occurs as a very acute condition and is rapidly fatal.

One of the most striking cases I have seen occurred in a man of 60 of the same type as the last, in whom I removed the prostate and a bladder growth. He made good progress until the fourth day, when he suddenly had pain in the epigastrium; the abdomen became acutely distended and the distension continued for two hours, when he died of cardiac failure. I have not seen another case so acute.

This post-operative distension in urinary surgery is not confined to prostatic and bladder cases. I have seen a similar condition which ended fatally after an operation for stone in the kidney, and distension of the colon is not uncommon during the first few days after kidney operations. It is seldom, however, that it is so serious as that following prostatectomy. I have seen it also in a case of septic stone in the kidney where no operation was performed.

In looking for a cause for the condition we must remember that in kidney operations the colon is stripped from its attachment to the kidney and below this, and there is sometimes a good deal of trouble in separating adhesions at the extraperitoneal aspect of the colon. When we remember also that in septic kidney conditions perinephritis is constantly present, and that this must involve the contiguous wall of the colon, there is no difficulty in recognizing that a local paralysis of the colon is likely to occur leading to distension with flatus which spreads to other parts of the colon.

In prostatic cases so simple an explanation is not possible. In most of those I have seen the colon is distended, and constipation and hiccough are frequent, but in some cases the stomach is the organ affected, and the distension affects the upper part of the abdomen; in these constant vomiting of coffee-ground material is usually a symptom, and a large quantity of this fluid may be removed with the stomach tube.

Most of these cases are cases of enlarged prostate with back pressure on the kidneys, and in some of them, such as that which I have described, uraemic symptoms actually appear. It is likely, therefore, that uraemia may have something to do with causing the condition. But there are cases that occur in younger men without sepsis or back pressure, and, further, the symptoms and proof of renal inadequacy is absent in most of the cases.

Two elements, I believe, enter into the causation. One is flatulent distension of the bowel from intestinal fermentation, and the other is exhaustion of the sympathetic nervous system as a result of uraemia, intestinal toxaemia, or shock.

Recently it has been suggested that post-operative dilatation of the stomach is due to dragging on the

* Part of an address delivered before the Brighton and Sussex Medico-Chirurgical Society on December 2nd, 1920.

mesentery by the small intestine dropping into the pelvis after the removal of large pelvic tumours (Borchgrevink).

Having recognized that such a condition may complicate prostatectomy, is it possible to foretell its occurrence and do something to prevent it? It is, I believe, possible to do so.

There are two different types of patient that are liable to this condition—a thin type and a stout type. Imagine a thin man of 60 with a sallow complexion. He complains of prostatic symptoms; the prostate is enlarged, and there is a varying amount of residual urine. Further investigation shows that he suffers from flatulent indigestion after meals, and has to be careful about his diet; his teeth are probably decayed and there is pyorrhoea; the tongue is coated. The abdominal wall is thin, and should lend itself to easy palpation but that the bowel is full of gas, the percussion note tympanitic, and abdominal palpation is difficult. The other type is a stout, flabby man of 50 or 60, often of the Jewish race. He is fond of rich fatty foods, and is immoderate in his indulgence in them. The abdomen is prominent, rounded, and tense; there is no pyorrhoea or decayed teeth. When you meet with an enlarged prostate with either of these types you may expect post-operative trouble from the bowel.

How can we prevent this complication and how treat it when it occurs?

In all such patients I recommend a course of four or five weeks' bowel treatment after the teeth have been carefully overhauled. This question of teeth is very important; it affects not only the bowel risks, but also the pulmonary risk. Oral sepsis is the cause in some degree, if not wholly, of the flatulent dyspepsia of the first type of case. It may take five or six weeks or even longer for the dentist to treat the oral sepsis, and there may be considerable difficulty in getting the patient to consent to the dental treatment, but the matter is so important that it is the duty of the doctor to insist on the mouth being clean before any operation is performed. Anaesthetists will, I think, support me when I complain of the condition of the mouth and teeth in many patients who come up for operation, not only in hospital but in private practice. I do not think that practitioners sufficiently appreciate the serious menace that such a condition is to a patient about to undergo an operation.

All these intestinal-risk patients, however, do not have decayed teeth and pyorrhoea and the second type very often have good teeth. The bowel itself must therefore be treated.

I do not presume to instruct such an assembly as this in the treatment of flatulent dyspepsia. Let me mention, however, the lines of treatment that have been most successful in the prostatic cases I have seen. They are the restriction of starchy foods and green vegetables in the diet, bowel antiseptic treatment, and bowel tonic treatment. A capsule containing β-naphthol 5 grains, salol 5 grains, and calomel $\frac{1}{8}$ grain has proved a good combination, and capsules of kerol (intestinal) are very valuable. At the same time the bowels must be regulated by vegetable aperients. I do not consider salts and aperient waters suitable for these cases, for they tend to cause distension of the bowel with gas. Tonic treatment of the bowel should be combined with those measures. Strychnine and ergot are the best drugs, and suprarenal and pituitary extracts act as powerful tonics of the bowel muscle.

Two other methods of treatment have been of much use in these cases—namely, abdominal massage and electrical treatment of the bowel. One would, of course, not think of employing either of these methods where the bladder is known to be distended with residual urine.

Now let us turn to the post-operative treatment. In the average patient the immediate preparation of the bowel for operation consists in giving a dose of castor oil two nights before the operation and washing out the colon on the morning of the operation. After the operation the bowel is left quiet for three or four days, and then a dose of castor oil is given. This is done in order to avoid straining after the operation, which sometimes causes bleeding.

If, after the operation, the patient commences to show distension of the abdomen or vomiting of dark coffee-ground material, a purge (castor oil) must be given at once.

In some cases the stomach is distended and there is persistent vomiting. Here the stomach tube should be passed, and the stomach washed out. Sometimes large quantities of dark brown fluid are removed and the washing will have to be repeated.

Borchgrevink, who looks upon dilatation of the stomach after abdominal operations as due to dragging on the mesentery causing obstruction at the duodeno-jejunal junction, recommends the prone position and elevation of the pelvis; and operation has been recommended with the object of raising the intestines from the pelvis and relieving the drag on the mesentery, and also of removing adhesions. I have not met with a case of post-prostatectomy distension where this procedure held out any prospect of success.

The more common cases have distension of the colon and hiccough, but no vomiting. Pituitary gland is a good drug in these cases, but it should be given carefully on account of its effect on the blood pressure; $\frac{1}{2}$ c.cm. may be given at first and repeated in a few hours, and 1 c.cm. given daily. Ergot and strychnine may also be given.

A high rectal tube should be passed and the colon washed out and a tube left for several hours at a time in the rectum. When the patient is stout, he should be made to lie on his side instead of being propped up in a sitting position, as the passage of flatus is facilitated by this position. Various enemata are given—soap and water, ox-gall, turpentine. Care is necessary in giving enemata of turpentine in old feeble patients. In a hospital patient I once saw sloughing of the whole thickness of the rectal wall in a circular cuff following a large turpentine enema.

PULMONARY RISKS.

There are two pulmonary risks that should engage the attention of the practitioner before the operation. One is the possibility of post-operative pneumonia and the other is bronchitis.

Most cases of post-operative pneumonia that I have seen when the patient has not been exposed for a long period at the operation were due to septic teeth, or to some septic condition of the nasal sinuses. These sources of septic pneumonia should be most carefully treated before the operation of prostatectomy is undertaken. It is sometimes urged that the operation is urgent and must be done without delay. There is nothing to support this view. It may be, and often is, urgently necessary to drain the bladder on account of sepsis or obstruction, but this can be done under local anaesthesia and the prostatectomy deferred until the patient has got rid of the oral or nasal sepsis.

Chronic bronchitis requires careful pre-operative treatment. A patient with bronchitis after prostatectomy, or, indeed, after any abdominal operation, is in a very serious state. Coughing is very painful and difficult, and the patient is apt, even in the sitting posture, to become water-logged from inability to expectorate. Pre-operative treatment may include courses of vaccine and even climatic treatment before the patient is fit for operation.

Chronic bronchitis is not infrequently combined with obesity and a fatty heart, and those patients are very grave risks for prostatectomy. Certain modifications of the operation should be made in order to lessen the risk in these patients. Spinal anaesthesia is used as an anaesthetic, the Trendelenburg position is avoided, and the patient is kept sitting up in bed after the operation.

I have tried prostatectomy under local anaesthesia in such cases, but have not been favourably impressed by the method. Cystotomy is easily carried out under local anaesthesia without the patient suffering pain or even discomfort, but I have found that even the most careful preparation of the bladder, urethra, and prostate with local anaesthetics is not sufficient to abolish the pain of enucleating the prostate, tearing across the urethra, and removing the gland from its bed.

Pronounced spinal curvature, whether due to old spinal caries or to other causes, is a grave pulmonary risk. One of the greatest risks I have taken, and one which I am glad to say was justified by success, was the case of a well known member of our profession who suffered from advanced osteitis deformans, and in whom the spinal curvature was so extreme that the ribs met the iliac crests on each side. The chest was rigid, and respiration was purely diaphragmatic. Yet he underwent a severe operation for growth of the bladder, and lived without recurrence for some years afterwards.

CIRCULATORY RISKS.

Circulatory risks are probably the most difficult of any to estimate where prostatectomy is proposed. There are some that are much reduced by careful treatment. Two of these deserve mention—namely, high blood pressure and cardiac insufficiency. With high blood pressure we expect post-operative haemorrhage. These patients usually stand haemorrhage very well, but a haemorrhage severe enough to cause a sudden drop of blood pressure may end fatally. Any hope of permanently reducing the blood pressure before operation is certain to lead to disappointment, but much can be done by rest, careful diet, removal of stimulants, and attention to the bowel, and a careful course of such treatment for a month before operation will well repay the time spent. I recently operated on a patient when the blood pressure was the most important factor in the case. The case was as follows:

A gentleman, aged 62, consulted me in October, 1920. He complained of frequent micturition night and day. There were recurrent attacks of difficult micturition, during which there was spasm of the bladder and severe straining. He had been catheterized, and this had been followed by a rise of temperature. The urine contained a small amount of muco-pus and very many micro-organisms. The blood pressure was 190 to 200 mm. Hg. In January, 1919, he had a slight attack of hemiplegia. The intensity of the spasmodic attacks suggested the possibility of some cord lesion.

He was a spare active man with a moderate enlargement of the prostate and no residual urine, suitable for prostatectomy, but with circulatory and nervous risks. Sir Thomas Horder examined him and reported that there were no signs of cord changes, but that definite traces of left hemiplegia still remained. The blood pressure was high, but Sir Thomas Horder agreed with me that there was a circulatory risk in not operating from the severe straining during the recurrent attacks of obstruction.

Operation was decided upon, and the following points were made in regard to the anaesthetic: Gas and oxygen and also ether were avoided on account of the effect on the blood pressure. The Trendelenburg position was precluded from the effect it would have on the cerebral circulation. The anaesthetic chosen was spinal anaesthesia with stovaine.

The operation passed off smoothly. There was one small haemorrhage after the operation, but it was easily controlled. The patient made a good recovery.

I have operated on patients suffering from the various forms of valvular disease of the heart, and also in a case of thoracic aneurysm, and have not had any trouble so long as compensation was good. If the patient can walk quickly and go upstairs without breathlessness, and can go about his ordinary duties without cardiac pain or other sign, there is apparently nothing in a valvular lesion to contraindicate prostatectomy.

When the blood pressure is high ether is better avoided, and in most cardiac lesions the Trendelenburg position should be avoided as far as possible. Spinal anaesthesia, with a very small amount of C.E. and oxygen, seem to suit these patients. In choosing the anaesthetic, the profound drop in the blood pressure, as the result of spinal anaesthesia, will of course be taken into consideration.

Anaemia is a further risk. The risk is partly operative and partly post-operative. These patients do not stand loss of blood at the time of the operation, and they are less likely to survive post-operative complications, such as bronchitis, bowel distension, exacerbation of pre-existing sepsis, etc. Moreover, they heal very badly. The wound fills with weak oedematous granulation. Closure of the bladder is delayed and a fistula may persist.

Brandsford-Lewis, in discussing the importance of anaemia in prostatectomy, states that haemoglobin, about 60 per cent., is favourable, 50 per cent. justifiable, 40 per cent. is unfavourable, and 30 per cent. fatal in prostatectomy. Without making any such hard-and-fast rule, I feel that there should be very careful consideration of this risk before operation, and that treatment should be directed to removing it.

Anaemia in these cases usually results from chronic sepsis, and the treatment must be directed primarily to removing this. In the great majority of cases the sepsis is in the urinary tract, and the patient is suffering from what is termed urinary septicaemia—a combination of uraemia from obstruction and toxaemia from chronic cystitis and pyelitis or pyelonephritis. In such cases the proper treatment is free drainage of the bladder by cystotomy. The removal of the prostate is postponed until the sepsis has cleared up and the haemoglobin content of the blood has improved. A two-stage operation is thus carried out.

Treatment of extra-urinary sources of sepsis should also be carried out. Alveolar abscesses, pyorrhoea, septic tonsils, sepsis of the accessory air passages, chronic appendicitis, cholecystitis, are some of these extra-urinary foci of sepsis that require treatment before prostatectomy is undertaken. Further, direct treatment of the anaemia should be undertaken. The question of transfusion of blood should, I think, be raised in these cases, and I am strongly of opinion that in selected cases this should be carried out before undertaking prostatectomy.

NERVOUS SYSTEM RISKS.

The question occasionally arises whether a patient suffering from tabes or multiple sclerosis should have an enlarged prostate removed.

The diagnosis is extremely difficult. There is an adenomatous enlargement of the prostate and signs of tabes. The point that at once arises is, what is the condition of the bladder wall? Is the residual urine that is present due to atony of the bladder wall or is it due to prostatic obstruction?

The following points are of importance in differentiating between nerve atony and obstruction. In atony of the bladder from nervous disease nocturnal incontinence is an early symptom. It appears sometimes before the other symptoms of nervous disease are noticed, and it should be a rule that whenever an adult male complains of nocturnal incontinence without other symptoms, tabes should be suspected, and a careful examination of the nervous system, including of course examination of the spinal fluid, made.

Incontinence of urine occurs, of course, in enlarged prostate, but not unless the bladder is distended and the leaking urine is an overflow. In tabes, on the other hand, incontinence occurs where only a few ounces of residual urine are present.

In enlarged prostate frequency of micturition is a prominent symptom, especially nocturnal frequency. This is often absent in tabes and there may be a lack of desire rather than increased frequency. Where cystitis is present, however, there will be frequent micturition in tabes.

The time of onset of bladder symptoms may have been before the prostatic age—namely, after 50 years.

On passing a catheter, the force of the stream through the catheter is much more powerful in enlarged prostate than it is in tabes.

Cystoscopy shows changes in the bladder in tabes that are quite typical of the "nerve bladder." The whole bladder wall is covered with thin, sharp trabeculae, crossing and recrossing each other, and between these are multitudes of sacculi. The trigone is not affected.

In the obstructed bladder the trabeculae are thick and fleshy, and sacculi only appear in the late stage, and are comparatively few in number. The trigone is involved in the trabeculation, and it may be difficult to recognize the interureteric bar and find the ureters. In multiple sclerosis the symptoms are those of a spasmodic bladder, and the diagnosis is more likely to be confused with cystitis. There is frequent micturition amounting to strangury, active incontinence at night, and sometimes also during the day, no residual urine, and the urine is clear.

When in a tabetic subject the residual urine is due to enlarged prostate prostatectomy will give a brilliant result. In such a case there is a danger of bedsores developing during convalescence, but this can be avoided by careful nursing. I have performed prostatectomy three times on patients the subject of advanced disease of the spinal cord—twice in tabes and once in multiple sclerosis—and in all with success, the vesical function being completely restored to its normal condition.

Another problem connected with the nervous system is operation on patients suffering from enlargement of the prostate who have had hemiplegia. This problem is connected also with the circulatory system, and I have discussed it under that system.

URINARY RISKS.

Of all the risks to which the sufferer from enlargement of the prostate is exposed, those connected with the urinary tract are the most common, and also the most frequently fatal. These risks are, however, the most amenable to pre-operative treatment. They are sepsis and renal inefficiency.

A very large number of the patients that come to the surgeon are already infected and are suffering from the effects of back pressure on the kidneys. They are passing through a danger period which may be of recent onset or may have existed for some months or even years. Operation on such patients frequently gives very brilliant results. Patients who are broken down in health, unable to attend to their business or social duties, may, after prostatectomy, make a striking recovery and return to their duties active and rejuvenated.

But there is another side to the picture. The mortality in such cases is high. Some of these patients die under treatment before an operation is performed, others die from the operation because it increases the septic absorption or overturns the already much disturbed balance of renal secretion, and others, again, while temporarily improved by operation, gradually go downhill from the continued sepsis and progressive renal failure. It may be said, therefore, of cases of enlarged prostate suffering from sepsis and renal failure that the condition of the patient is very grave and will eventually be fatal without operation, that the mortality of operation in such cases is high, and that the duration of life in most cases that survive operation is shortened.

Is it necessary that patients should be allowed to pass through this period of danger before being relieved by operation? I hold that it is not, and I think most surgeons who do much prostatic work will agree with me that operation should be performed early in order to avoid this period of danger and its after-effects.

The remedy lies almost solely in the hands of the general practitioners. If they bring the patient up for operation in the early stage, before the bladder has been infected by the catheter and before the kidneys have been injured by the continued back pressure, this danger period can be avoided. There are, of course, some patients who refuse to submit to operation until they are convinced by the sufferings entailed by catheter life that it is inevitable.

The result of the operation in an early case is not so striking as in a case where the patient has suffered from urinary septicaemia, but after operation his prospect of life is better than even the most brilliant case of recovery from urinary septicaemia.

The practitioner should be prepared to make a diagnosis of enlarged prostate before an attack of retention has occurred.

Frequency of micturition is usually the earliest symptom. It may be the only symptom even when the prostate has reached a considerable size. There is a curious belief prevalent among the male public that increased frequency of micturition and nocturnal frequency is a normal accompaniment of advancing years. Nothing could be more erroneous. The senile bladder is, if anything, less sensitive than the young bladder, and any persistent increase in the frequency of micturition, nocturnal or diurnal, is pathological, and requires careful investigation.

Rectal examination may disclose, even in the early stage of the symptoms, a large elastic prostate. On the other hand, there may be a doubt as to whether enlargement is present. In such a case we must remember that the prostate enlarges in two directions—namely, outside the bladder, extending backwards into the rectum, and upwards into the bladder. There may be intravesical enlargement with very little change that can be detected *per rectum*. The next step, therefore, is cystoscopy, and at the same time an estimate will be made of the residual urine.

Where difficult micturition is the chief symptom, the degree of obstruction varies with wide limits, and I can best discuss it by giving three types.

TYPE 1.—*The patient with chronic retention of urine and partial renal failure, or uraemia.*

The patient can pass water with a fair stream, but he has pronounced nocturnal frequency and sometimes nocturnal incontinence. He usually complains of headache and thirst, and sometimes the latter is a prominent symptom. The tongue is dry and glazed, the appetite poor, and the bowels constipated. The patient may be losing flesh, but he sometimes says he is getting stouter, the fact being that the distended bladder increases his girth. On examination there is a distended bladder reaching almost to the umbilicus. On rectal examination the prostate is enlarged and elastic. There is no more dangerous class of case in urinary surgery than this. A careful survey of all the symptoms is called for in order to estimate fully the probable danger points under treatment.

Finally, the condition of the kidneys should be carefully investigated. I have already indicated the symptoms of renal failure or uraemia. One of the tests of the renal function should be added to make the picture complete.

The most easily applied of these tests is called the urea concentration (MacLean) or forced urea elimination test, and there is no reason why the test should not be used by every practitioner. A dose of 15 grams of urea is given by the mouth, and the patient at the same time directed to empty the bladder as far as he can. The urine passed in the first hour is collected as a specimen, and that passed in the second hour after administration of the urea is collected. The urea is quantitatively estimated by the ordinary method. The normal kidney will excrete 2 per cent. or over, a damaged kidney between 1 and 2 per cent., and a seriously damaged kidney under 1 per cent.

I will pass now to the treatment of such cases.

The two cardinal points in the management of such a case are to avoid infecting the bladder and to empty the bladder very slowly. A distended bladder is much more easily infected than a normal bladder, and the slightest mistake in technique will be followed by some cystitis, which in such cases quickly leads to ascending pyelonephritis and death. When there is chronic distension of the bladder the kidneys are working against very high pressure. If the bladder is rapidly emptied, the sudden fall of pressure leads to a rush of blood into the renal vessels and suppression of urine very often supervenes.

Such are the dangers. How can they be avoided?

In the first place, there must be no hurry to pass a catheter without adequate preparation. The condition has been going on for many months, if not for years, and a few days longer will make no material difference. Therefore, put the patient to bed, keep him warm, get the bowels well cleaned out, give him urotropin and as much fluid as he will drink.

After a few days, under the most rigid aseptic precautions, pass a coudé catheter, No. 8 or 10, and tie it in the urethra. Withdraw 10 oz. and plug the catheter. Get the nurse, very carefully drilled in asepsis, to withdraw 10 oz. every hour until the bladder is empty. Now attach a small rubber tube to the catheter and allow the urine to drain away continuously into a bottle. All the time continue the urotropin and large quantities of fluid and keep his skin acting by a warm temperature and hot bottles.

The danger period lasts usually a week or ten days, and during that time continuous drainage of the bladder must be kept up. One or two tests of the renal function during this period will show the functional condition of the kidneys. The clinical symptoms are a very important indication also.

With improvement the thirst diminishes and is lost, the tongue becomes moist, the appetite improves, and the headache disappears. On the other hand, persistence or increase of these symptoms is a grave indication. To these may be added drowsiness during the day and wandering and restlessness at night. The patient tries to get out of bed.

At the end of ten days or a fortnight what is to be done? If the patient has improved under the drainage, and the renal symptoms have disappeared, operation may be undertaken. If the renal symptoms have continued and increased, the bladder should be drained suprapubically under local anaesthesia, or gas and oxygen, and the patient must wait until the renal function has improved before the prostate is removed. It is sometimes necessary to wait for many weeks or even months before the patient is ready for prostatectomy. If the period is prolonged, a suprapubic apparatus should be fitted and the patient allowed to go about.

It will sometimes happen that the facilities for carrying out this programme of draining the bladder are lacking. In this case, and unless you are absolutely satisfied that you can conduct the case with safety from sepsis, it is far better to place the patient under the surgeon at once without passing any instruments at all.

TYPE 2.—*The patient with frequent micturition, difficulty, and a well-marked enlargement of the prostate, and about 6 oz. or 8 oz. of residual urine.*

It is obvious that an operation will have to be done or catheter life commenced. In such a case the decision should not be left until an attack of retention has occurred. The danger of the catheter, whether it is passed as an emergency for the relief of an attack of retention or whether it is used regularly to remove residual urine, is that sepsis is inevitable. The result of introduction of bacteria is cystitis, and this is immediately followed by ascending pyelonephritis or surgical kidney.

After ten or fourteen days the attack usually subsides, but the urine remains cloudy. Recurrent attacks occur after fatigue, constipation, exposure to cold, dietetic indiscretion, and such causes, and it becomes apparent that the patient is gradually going downhill. The condition that we know as urinary septicaemia is developing.

In the great majority of patients on catheter life, whether they suffer from urinary septicaemia or not, there comes a time when, from increasing difficulty in passing the catheter or from haemorrhage or pain in passing it, catheterization is no longer possible and an operation must be done.

I have already stated my view that patients should never be allowed to get into this condition, and that early operation should be performed in order to avoid it. If infection has already occurred and urinary septicaemia has developed, the first aim of treatment should be to get rid of the combined back pressure and sepsis. This is done by draining the bladder.

A suprapubic cystotomy is performed under local anaesthesia or under gas and oxygen, and the patient is given large quantities of fluids and hexamine or salol. Rectal administration of saline may be necessary, for the patient may be unable to take sufficient fluid by the mouth. At the same time the bladder is flushed by constant irrigation through a catheter tied in the urethra and a Hamilton Irving suprapubic box.

Removal of the prostate is deferred until the urine is sufficiently clear and the tests of the renal function are satisfactory and the symptoms of uraemia and sepsis have disappeared.

TYPE 3.—*The patient complains of a little difficulty in starting micturition, and may get up several times at night. The prostate is found to be very large and elastic. There may be little residual urine.*

In this class of case the patient has difficulty in realizing that an operation is necessary. He objects, as he puts it, to having an operation done when he is quite well. He is, however, in a dangerous position. At any time, from slight causes, such as fatigue, chill, etc., he may have an attack of retention, necessitating the passage of a catheter under difficult conditions, with the possibility of septic infection, or he may gradually develop the condition of chronic retention of urine, with back pressure effects in the kidneys, that I have described. These issues should be clearly placed before him and an operation recommended to prevent them.

There is another outcome which you do not hear very much about. An adenomatous prostate occasionally becomes malignant. There are, I find, two types of malignant prostate with which we have to deal. In the one the prostate is hard, nodular, and fixed, and the change has evidently been malignant from the commencement; in the other there is an elastic adenomatous prostate, which at one part is hard and leathery and becoming fixed. Further, there are some cases in which an enlarged prostate, adenomatous on rectal palpation, shells out easily and completely, but the pathologist reports that at one part in the gland the appearances are those of a malignant growth.

This malignant development does not take place in a large percentage of cases, but it is met with sufficiently often to make it necessary to consider it in estimating the prognosis of a case of enlarged prostate treated without operation.

INDICATIONS FOR OPERATION.

In discussing the question of operation as opposed to catheter life with your patients, I would like you to consider the following points:

1. Enlargement of the prostate is a progressive disease, the rate of increase of which we cannot foretell.
2. As the prostate enlarges, the patient grows older, and is less able to withstand the effect of uraemia or sepsis, or the effects of a severe operation.
3. When the symptoms become acute, much damage has already been done to the kidneys; and although improvement may follow operation, much of the damage is permanent.
4. Some adenomatous prostates become malignant.
5. The mortality of catheter life is higher than that of prostatectomy.
6. A very large proportion of the cases of enlarged prostate treated by catheter are forced eventually to undergo operation.
7. The prognosis in such cases is much graver than if the operation had been performed without a period of catheter life.
8. A large proportion of the deaths after prostatectomy are due to the sepsis caused by pre-operative catheterization or the back pressure and renal inefficiency due to delay in submitting to operation.

THE TEACHING AND STUDY OF HUMAN ANATOMY.

BY

RICHARD J. A. BERRY, M.D., F.R.C.S., F.R.S.EDIN.,

PROFESSOR OF ANATOMY, INCLUDING HISTOLOGY, IN THE UNIVERSITY OF MELBOURNE.

CONTRARY to currently accepted opinion, human anatomy is not a study of the dead, but of the living. It merely utilises the dead as a partial and imperfect means to an end. That end seeks to establish the essential foundations upon which the practice of medicine is based, and hence the place of anatomy in the medical curriculum. It is not a thing apart from the curriculum, but belongs to every part of it. Anatomy also endeavours to promulgate the welfares of peoples by the study and interpretation of the biological laws of life. The former is the particular province of the student of medicine and the surgeon, whilst the latter belongs more exclusively to the professional anatomist. It should, however, be the aim of both to correlate the study of life with that of disease, and hence anatomy, as a part of the medical curriculum, should lead up to the study of medicine and surgery. If anatomy fails in either or both of these objects it can hardly expect either the recognition or the prominence in our curricula to which it is really entitled.

That anatomy has too long been regarded and treated as a study of the dead is only too probable. Its textbooks and teachings still reflect the multiplicity of detail of the mid-Victorian period, but do so in an even more aggravated form, whilst the divorce from the clinician is more complete to-day than at any other period in the history of medicine. If anatomy is to be taught to medical students on purely academic lines apart from hospitals and the study of disease, in water-tight compartments of medical curricula, and with examinations which are mere feats of memory, so long is it certain that as thus taught, crammed, and forgotten, it subserves no useful purpose in the study of disease.

This conception of anatomy as an academic study of the dead has resulted in an over-accumulation of largely unimportant detail. The unfortunate student of medicine is unable to differentiate between the vital and the useless. To him articulations of carpal bones are of equal import with lymph glands, probably more, because he can see the former and very seldom sees the latter. Relations of trivial arteries—which the surgeon seizes and ties—are matters to be learnt by rote, and bulk, in the student's eyes, as largely as great veins, epiphyses, and lymphatics. Muscles are studied with a meticulous attention to trivial details of osseous attachment, but with no conception of their collective functions in the living subject. Swamped in a morass of detail the student can no longer see the distant tree of knowledge for the mud.

Man is an animal—a highly specialized one in some directions, much less so in others. In his bodily structure and functions he conforms in every detail to the great and

universal laws of nature, and hence the student of anatomy must understand these laws and realize that they are the laws of the living and not of the dead. Anatomy is not, therefore, merely a study of structure. It is rather a study of the modification of structure to function, of impairment of function, and of the different vital conditions under which these functions are carried out. Properly interpreted, such a study leads logically and inevitably to an understanding of the phenomena of life as well as to those of disease. Its teaching necessarily implies a wider vision than is to be obtained from the dissecting-room cadaver, and compels from the expert some general acquaintance with embryology, histology, biology, and anthropology. A knowledge of medicine and surgery goes without saying. In this conception of anatomy there is little room for petty details of structure, but there is an immense field for observation, study, research, and quickened interest.

Of the many thousands of students whom it has been my privilege to teach I have never yet met one who has displayed the smallest interest in the purely anatomical construction of, say, the human shoulder-joint. Show the same man, however, that this generalized structure pervades the whole vertebrate kingdom; that modifications of this structure necessarily occur in different animals according to the specific purposes to which the limb is put; that man is no exception to this law, but that his shoulder-joint is also modified for man's particular purposes, and that this modification necessarily means a liability to frequent dislocation, and that once it occurs muscular action will play an important part in the subsequent events of diagnosis and treatment—then that student's acute interest is not only aroused, but his reasoning powers are stimulated, his memory is quickened, and his observational powers are directed to the fact that he himself possesses a shoulder-joint. He has thus travelled a long way on the path of truth—the path that leads to the living and not the dead.

Take, again, the arch of the aorta, with its long list of anatomical relations. Their acquirement by mnemonics, rather than by reason, is but empiricism. On the other hand, show the student, if possible, a case of aneurysm of the aorta; explain the physical laws which underlie the occurrence of aneurysm of the aorta and of the popliteal artery; demonstrate that all the clinical phenomena of aneurysm are wholly referable to pressure on anatomical structures; elicit from the student which of the aortic relations must be so pressed upon, and why, and what follows, and a totally different and more lasting impression is made upon the mind of the auditor than can possibly be made by a mere recital of names.

The human hand and foot, taught from a basis of evolution, embryology, and morphology, leading on to function, and through function to a loss of function—that is, disease—is an altogether more useful and profitable business than any mere collection of osseous articulations, muscular attachments, and relations of trivial arteries. The central and autonomic nervous systems also furnish—as do, indeed, almost all parts of the human body—many splendid instances of the real conception of anatomy as a study of the living. That anatomy can no longer be regarded as mere details of the dead is amply proved by this last system. Dissections on the cadaver—even the most careful—display but one portion of the autonomic nervous system, namely, the vertebral sympathetic, and not even the whole of that. If this be the limits of the student's horizon it is not humanly possible for him to acquire any adequate knowledge of the structure and functions of the whole of this important system. Doubtless physiology will assist him, but his naked-eye anatomy will not. Similar remarks apply equally well to the central nervous system, to the surgically important epiphyses and lymphatics, and to muscular actions and control. If anatomy is not to lead to a study of life, and through life to disease and its treatment, its failure must be writ large across the page of medical history.

Passing in the next place to points of more technicality but of less importance, human anatomy is suffering rather badly at the moment from its nomenclature. That nomenclature is out of date, and requires urgent and prompt revision. To squabble as to whether we shall employ the Basle anatomical nomenclature or revert to the still more antiquated "old terminology" is to serve the science badly. The latter is hopeless confusion and the former is already out of date. There is no room in the anatomy of the living for anything but an accurate, scientific, and biological nomenclature which, within limits, shall be equally applicable to embryology and morphology. Such terms as "anterior" and "posterior" should give way to "ventral" and "dorsal," nor is there any scientific justification for the retention of such names as "inferior epigastric artery," as the artery is not "inferior" in any other animal but man. It is also open to question if we are justified, in view of modern neurological knowledge, in speaking of "branches of distribution" of both afferen, and efferent peripheral nerves. These criticisms notwithstanding, we owe much to the labours of the Basle International Commission, amongst other things the elimination of nearly 25,000 useless synonyms from the already long list of the names of gross anatomy. That the Commission's work is now out of date is undoubted, and there is urgently wanted a new commission of English-speaking anatomists, physiologists, and clinicians to determine the main principles to be adopted in the nomenclature of known facts, leaving details to a smaller committee of the Commission. As anatomical nomenclature concerns the whole medical profession, it would be well for clinicians to be consulted. Much of the opposition towards the Basle nomenclature has arisen from ignorance of the principles involved, and from the fact that it was largely a purely anatomical commission. With the main principles determined, a smaller and permanent committee of, say, the Royal Society, is required to determine from time to time the terms to be employed for the new facts discovered by research. Recent work on the autonomic nervous system is a conspicuous example of the confusion which is arising from the chaotic and improper use of terms and expressions for which there is no official sanction and but little foundation in fact.

That anatomical textbooks abound in a mass of detail, with little or no reference to function, and much of it of no importance, is easily verified by consulting them. Let one example suffice. The pectoralis minor muscle will be found described with the most faithful attention to the minutest points of its attachments. Why any student should be expected to burden his memory to the exclusion of his reasoning and observational powers with such verbiage—one had almost said garbage—is difficult to understand. From the standpoint of biology they do not elicit the important truth that, in man, the muscle has undergone retrogression from its more functional condition in the bird, which is in accordance with the great evolutionary laws underlying modification of structure to function; whilst from the standpoint of surgery the only important fact about the pectoralis minor muscle consists in its general relation to the ventral axillary wall, and to this, curiously enough, the student's attention is not directed by his textbook. Could not, then, much useless detail be eliminated from our anatomical textbooks, thus making room for facts of greater interest and wider applicability? Personally, I think it not only could but should, though conscience compels me to admit that I have myself been guilty of much which I also condemn. The real truth is that without the active co-operation of the clinician it is impossible for the anatomist to know how far he may proceed with safety in the elimination of the unnecessary. It should, however, even now be the plain duty of the teacher to tell his students where, how, and why much of this detail can be dispensed with.

The limited conception of anatomy as a study of the dead has also tended to limit the field of research, as has also that other conception that anatomy is restricted to the study of Man. Its aim is undoubtedly Man, the living man, but its foundations are to be sought in the study of all vital phenomena. The fields of heredity, morphology, and physical anthropology offer great and unrestricted possibilities to the anatomist of the living. The human cadaver offers few such fields.

This conception of human anatomy as a study of the living and not of the dead—if it be the true one, as experience leads me to believe—necessarily implies some drastic and revolutionary changes in its mode of teaching, in its place in the medical curriculum, and in the position of the laboratories in which its study should be prosecuted. The last mentioned should be as intimately associated with a hospital as is possible. If that be not possible, then much of its higher teaching should be conducted in a hospital with the aid of a projection apparatus, the living subject, and the clinician. Its study should not be restricted to

certain terms of the curriculum, but should be spread over most, if not all, the terms of that curriculum, and should be directly linked up in the form of team work with other subjects such as medicine, surgery, obstetrics, neurology, and the special senses. The actual dissecting can be completed in the earlier years of the curriculum with the elimination of much of the useless detail with which it is now encumbered. The supervision of this earlier part of the work can be safely entrusted to junior surgeons and recent graduates. Its higher and later study should be in the hands of the professional anatomist, who should himself be a member of the staff of the hospital in which his teaching and researches will be conducted. Under such conditions—which are not so Utopian as to be impossible of realization—the subject, the profession, and the patient would benefit enormously.

It may be argued that the extended field of observation which is here urged as being the province of the anatomist is altogether too large. That this is not so is shown by the number of living men who, in both their teachings and their writings, very efficiently cover this wider domain. What is more to the point is where such men are coming from in the near future. The social outlook has been so profoundly modified by the economic consequences of the Peace as to make it certain that no young medical man of promise and ability will nowadays wilfully or deliberately choose the life of denial which, on existing salaries, will be his only reward as an academic teacher of medical science. Neither the universities nor the profession need expect the advancement of medicine by research if the emoluments of such research are to compare none too favourably with the daily wage of the manual labourer. The caustic critic—himself possibly paying supertax—need not regard this as a personal "grouse." It is a very genuine fear for the future of a branch of medical science to which every practitioner owes so much.

To many the ideas herein expressed will doubtless appear heterodox and revolutionary. On the other hand, a recent visit to England has convinced me that there is a much larger number who are very cordially in agreement with the main conception of this paper, which is that anatomy is a study of the living, and that its methods require modification. It is perhaps unnecessary to adduce evidence of the thesis, but it may be well to point out that the pages of *Medical Education in Europe*, published in 1912 by the Carnegie Foundation for the Advancement of Teaching, contain ample evidence of the fact that an anatomical institute should be in close co-operation with a hospital. The recently published report on the medical curriculum by the Edinburgh Pathological Club is similarly convincing as to the impossibility of teaching human anatomy in a water-tight compartment of that curriculum. The discussion at Cambridge in June, 1920, on the preliminary medical sciences—and particularly the eloquent words of Sir George Newman and Professor Arthur Keith—intensifies the necessity for change in the relations of the ancillary sciences to medicine. As Osler remarked, "Biology teaches the problem of life at every point, and may claim, as no other science, completeness of view and a comprehension which pertains to it alone." This is verily the living anatomy herein advocated, as is also Keith's dictum that "Anatomy could be made a living practical part of medicine." Why is it not?

A NOTE ON THE USE OF ANTIGONOCOCCAL SERUM.*

By FRANCES IVENS, M.S.Lond.,

HONORARY MEDICAL OFFICER, DISEASES OF WOMEN, STANLEY HOSPITAL, LIVERPOOL.

THE prevalence of gonorrhoea in young and otherwise healthy married women[1] makes it peculiarly necessary not only to improve technique but to utilize all available means to make conservative gynaecological surgery a success in the presence of this infection. Until the last few years antigonococcal serum therapy has not been generally employed, although as early as 1895 de Christmas[2] experimented with it in guinea-pigs and rabbits. Wassermann and Wertheim confirmed his experiments, the former showing that the poison was contained in the body of the microbe, which did not belong to a diffusible group. These results were applied by Rogers and Tory[3] in 1906, and Parke Davis's antigonococcal serum was used successfully in the treatment of gonorrhoeal rheumatism. Recently Paraf[4] pointed out the points of resemblance between the meningococcus and the gonococcus, and urged the necessity for methods of local application of the serum to bring it into immediate contact with the microbe, as is done in the treatment of cerebro-spinal meningitis by intrathecal injections. Paraf supported his views by inoculation experiments in the anterior chambers of rabbit's eyes, and by intrathecal injections into monkeys. With Nicolle's serum he cured 14 out of 16 cases of arthritis by the intra-articular injection of serum. This serum is active, possessing agglutinating, bacteriolytic, and bactericidal qualities, and is endowed with therapeutic properties against different strains of gonococci.

Encouraged by the results obtained during the war by the use of specific serums in wound infection, and more especially in gas gangrene,[5] I determined a year ago to experiment with antigonococcal serum in the treatment of some of the cases of gonococcal infection coming under my care. I employed serum in about 30 cases, in 22 of which tubal infection was the most marked feature. Endocervicitis was present in three, and in three cases of arthritis one had occurred during pregnancy, another in the puerperium.

I adopted three methods of application. In one series I gave the serum subcutaneously diluted in normal saline, usually in a dose of 20 c.cm., repeated at intervals of a couple of days, every three days, or occasionally a week, giving in all from 20 to 200 c.cm.

In another series, on the supposition that the toxin is not diffusible, I tried the intraperitoneal method. Where there were dripping pus tubes or a pyosalpinx the tube was washed out with normal saline, after being, if necessary, opened up. Conservative surgery was adopted when possible, both tubes, or at any rate one, being left. With a syringe 20 c.cm. of serum was injected into the tubes, sometimes into the ovary, and the residue left in the pouch of Douglas. The abdomen was then closed without drainage, and the Fowler position adopted. To avert anaphylactic shock a subcutaneous or rectal saline was given simultaneously. This method, which we employed empirically during the war, has been shown by Richet[6] to have a scientific basis—namely, that sodium chloride has a protecting action against the assaulting infection. Lumière and Chevrotier[7] have recently shown that other sodium salts act as well.

Thirdly, in a few cases of endocervicitis with profuse leucorrhoea I tried serum packs in the vagina, alternating daily with packs moistened with equal parts of 10 per cent. salt solution and 5 per cent. carbolic acid. In one case 200 c.cm. of serum were used, but my limited supply did not permit me to utilize this method as frequently as I wished. The after-history of these local cases has been peculiarly good—one has recently become pregnant, another, who had had previous ineffective treatment extending over a couple of years, got quite well, all trace of gonococci disappearing.

In no case have I used serum intravenously, as it is the only method in which I have seen fatal anaphylactic shock supervene after the use of serum. With repeated doses there is little doubt that it is safest to use the fractional method, and not to allow more than seven or eight days to intervene between the first and second doses.

With two exceptions all these patients were married women. Thirteen had no children, and nine one only—a striking percentage of sterility. All but three were between 20 and 30 years of age.

Every effort was made to confirm the diagnosis by bacteriological findings. The history and physical signs were generally clear, and I have not included doubtful cases. The existence of purulent vaginitis and of ophthalmia neonatorum in the children was of diagnostic value. Of the 30 cases subcutaneous injections were used in 19, in 6 intratubal and peritoneal, in 3 vaginal packs, and in 2 cases of bartholinitis, serum dressings.

RESULTS.

All the cases have made a good immediate recovery. In nearly all, either by personal investigation or through

* Read at a clinical meeting of the Liverpool Medical Institution, December 16th, 1920.

their medical advisers, I have made myself acquainted with their after-histories, which have been on the whole extremely satisfactory. There have been three definite failures—one an acute case, where an insufficient quantity of serum was perhaps responsible, and two which relapsed after a period of some months' good health, and where there was every possibility of reinfection. Further operation had to be undertaken in all three cases, otherwise the results have been good. In spite of their dislike of subcutaneous injections many of the women have said they were glad to have them, as they felt the benefit. In nearly every case relief of pain was a marked feature. Seen after varying intervals of months the patients described themselves as feeling splendid, being fit for anything, and able to do their own washing—in fact, they form a marked contrast to many other cases of gonorrhoeal infection where no serum had been given at operation, and where the presence of peritoneal adhesions causes so much pain and disability. In one case pregnancy was apparently proceeding normally. Discharges had stopped, and it was difficult to collect enough for bacteriological examinations, all of which were negative.

SPECIAL CASES.

Case 1.

A good result was obtained by the intraperitoneal use of serum in the case of Mrs. B., the mother of two children, one a girl suffering from gonorrhoeal vaginitis, while the baby had ophthalmia neonatorum. There was a left-sided pyosalpinx and an abscess in the pouch of Douglas. One tube and ovary were removed, and 20 c.cm. of serum were left in the pelvis, the abdomen being closed without drainage. There was a very slight febrile reaction the night of operation; temperature 100°, pulse 90. The patient made a good recovery. When seen eight months later she looked fit and well, and declared that she had never been in better health.

Case 2.

Mrs. V. was a case of acute salpingitis, associated with metrorrhagia. The abdomen was opened, sero-pus mopped out of the pelvis, and the tubes washed with saline solution, but not removed. Serum was administered subcutaneously in saline. There was no febrile reaction. The result was excellent, and her doctor reports that her pelvic condition ten months after operation is most satisfactory.

Case 3.

Mrs. P. was a case of arthritis of the wrist occurring about the seventh month of pregnancy (primipara). There was a profuse cervical discharge. The patient was taken into hospital and 20 c.cm. of serum were given every few days subcutaneously in saline until 150 c.cm. had been given. One injection was made into the tissues round the wrist-joint and caused a marked local reaction, with redness and swelling of the limb. This passed off, and both discharge and pain ceased. The baby was born in the maternity hospital and was quite healthy. Both mother and baby were seen some months later in the out-patient department in excellent condition; wrist movements were normal and leucorrhoea had ceased. In this case the patient had left her husband.

Case 4.

Another favourable result was in the case of Mrs. J., where there was a history of leucorrhoea extending over two years. After the birth of a child arthritis of the left hip developed and the patient was confined to bed. She was taken into the maternity rest home for treatment, with her baby, aged 9 weeks. No gonococci were present, but her husband was also suffering from joint pains. Two subcutaneous injections of serum were given at an interval of eight days, each producing a very marked febrile reaction the same evening. The breast-fed baby also developed a serum rash. In this case the result was excellent. Pain ceased and the patient was able to leave the home in about three weeks. When seen in the out-patient department three months later she could walk well, had no pain, and was very pleased with herself.

Case 5.

In a chronic case of hydrosalpinx (Mrs. N., married six years, husband a sailor, no children) both tubes were opened up. Three doses of serum were given subcutaneously at intervals of forty-eight hours. There was a marked febrile reaction each evening, the pulse being 116 and temperature 104.6° on one occasion. This patient was seen nine months later—fornices clear, no discharge. She said she was in excellent health.

Case 6.

Another case, Mrs. T., is interesting for the light it throws on obscure causes of puerperal infection. This patient had been under treatment during pregnancy for both gonorrhoea and syphilis in the venereal disease department.

Before admission to the maternity home discharge had ceased for some weeks, and the Wassermann test was negative. The confinement was normal and was conducted under the strictest aseptic conditions, which include the shaving of the vulva and the wearing of gloves by all associated with the conduct of the labour. On the fifth day a rigor occurred, and the temperature rose to 102.8°, pulse 120. The patient was anaesthetized and thoroughly examined, the uterus being curetted and douched. It seemed so probable that the case was one of latent gonococcal infection lighting up in the puerperium that at the same time I gave 10 c.cm. antigonococcal serum with 10 c.cm. antistreptococcal serum. The latter was given not because the case was believed to be one of streptococcal infection, but as a prophylactic against a secondary infection. Temperature and pulse dropped to normal, and the patient made a good recovery.

The diagnosis was confirmed by the presence of gonococci in the uterine discharge. There were no streptococci.

From such a limited number of cases I do not presume to draw any definite conclusions, but I think these favourable after-histories warrant further experiment and study. I am hoping also to receive some assistance from bacteriological and immunity experts respecting the best method of administration of the serum, with regard to the site of the injections, their incidence, and the amount to be given. On theoretical grounds it is surprising that subcutaneous injections have been so successful, bearing in mind the nature of the microbe. Can one expect to reach an organism secreting an endotoxin by the blood stream, or must some other method be found by which it can be attacked locally?

Also, what is the explanation of the vigorous febrile reaction in chronic cases where subcutaneous injections have been used, while in the acute infections, where the tubes are pouring out pus, there is practically no febrile reaction either with the subcutaneous or intraperitoneal method?

In conclusion, I should like to take this opportunity of thanking Professor Nicolle of the Pasteur Institute for his kindness in placing so much valuable serum at my disposal; to Professor Beattie and his staff for numerous bacteriological examinations; and to Dr. Ruth Nicholson and my house-surgeons and sisters for their assistance with the notes and observations.

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ALBUMINURIA IN RELATION TO LIFE ASSURANCE.*

BY

F. PARKES WEBER, M.D., F.R.C.P.

In the following remarks I shall deal only with albuminuria in youth and early adult life. From the point of view of prognosis and examinations for life assurance and appointments for clerkships, etc., I prefer to divide the subject under four main headings.

I.—*Albuminuria Connected with Definite Nephritis, Chronic Heart Disease, Acute Febrile Diseases, Amyloid Disease, and other Conditions, such as are met with in Hospital Wards and Ordinary Medical Practice.*

These cases are well known, and in the present discussion we are not concerned with them, excepting in regard to so-called "residual albuminuria" following an attack of acute nephritis. As long as there is albuminuria of this "residual" kind a life cannot be regarded as up to the normal standard; there may still be a slumbering inflammatory process in the kidneys (one or both). Mere functional recovery in the general condition of a patient, with persistence of albuminuria, does not mean that the life is a first class one any more than does functional recovery in a case of cardiac valvular disease with the persistence of a valvular murmur and cardiac hypertrophy. The extra amount to be placed on the life should depend on a variety of circumstances—for instance, the presence or absence of tube-casts, the amount of the leakage of albumin, the results of various tests as to efficient

* Read at a discussion on the subject at the Assurance Medical Society, January 5th, 1921.

functional activity of the kidneys, the length of time that the albuminuria has lasted, the blood pressure, and the condition of the candidate in other respects.

II.—*Transient Albuminuria Due to Various Causes.*

Under this heading I would include cases of albuminuria due to slight temporary nephritis and renal irritation, cases connected with dietetic errors, food idiosyncrasies, or the action of drugs, and cases of transient albuminuria caused by excessive muscular work. In many cases that I would place under this heading the precise cause of the albuminuria must remain uncertain, but the important point is that the albumin disappears rapidly and completely and that the general health is and remains good. In such cases several examinations are naturally often required before the life can be regarded as a first-class one.

III.—*Postural or Orthostatic Albuminuria.*

Under this heading I group the cases characterized by the occasional, but not invariable, presence of albumin (sometimes little, sometimes much) in the urine passed when the patient is up (that is to say, has been up for some time) but not in that passed when he is in bed or immediately after he has been lying for some time—for instance, in that passed immediately after the night's rest on getting out of bed in the morning. The albuminous urine in these cases frequently contains an excess of "nucleo-albumin" or mucin,* and not rarely calcium oxalate crystals are found on microscopic examination, and sometimes a few red blood corpuscles. "Cylindroids" in fair numbers are frequently observed, but the presence of true tube casts, excepting a few occasional hyaline casts (found with the aid of the centrifugal machine), should be regarded as suggesting some superadded renal irritation or slight actual nephritis.† I believe that the only practical way to distinguish these cases in ordinary practice is to obtain samples of the candidate's urine passed immediately after getting out of bed in the morning. In genuine cases these samples of urine should be found to be quite free from albumin. It is an unfortunate mistake occasionally made to speak of the "morning urine" in cases of orthostatic albuminuria being free from albumin, for it is precisely the urine passed at about 10 o'clock in the morning which may be especially albuminous. For practical purposes I think that what is called "lordotic albuminuria" (L. Jehle and others) should be regarded as a variety of orthostatic albuminuria in which a decidedly lordotic position of the body acts as an essential and determining (though not the only essential) cause of the albuminuria.‡

In the discussion on the after-history of cases of albuminuria occurring in adolescents, which took place on May 2nd, 1911, at the Medical Section of the Royal Society of Medicine, I made some remarks on the favourable prognosis in such cases,§ and said that I did "not think that albuminuria occurring in apparently healthy adolescents could justly be regarded as belonging to any other class than orthostatic albuminuria, unless it could be definitely ascertained that the urine passed immediately on getting out of bed after the night's rest contained albumin." If anything, I am now still more convinced that in uncomplicated cases of orthostatic albuminuria the life may be regarded as a normal one from the life assurance point of view. Moreover, no young person should be prevented from living an ordinary active life merely because of the presence of orthostatic albuminuria. Indeed, for these cases an active life—as much as possible in the open air, without over-fatigue—is probably the best. True orthostatic albuminuria may occasionally be met with up to 25 to 30 years of age (and possibly even later in life). In some way or other it is often connected with the tall "lanky" build of body suggestive of visceroptosis; it has been much written about, especially by Continental authors, and, as every doctor now knows, is frequently associated with, and excited by lordosis (Jehle). There is nothing surprising in the fact that it may occasionally exist in association with true nephritis (for instance, after scarlatina), and that it may be met with in the subjects of tuberculosis, syphilis, etc. The few *post-mortem* examinations that have been recorded tell us nothing more than this. It seems, indeed, quite natural that, occurring, as orthostatic albuminuria not rarely does, in "overgrown" children and in tall, flat-chested and often lordotic adolescents, it should be occasionally associated with early pulmonary tuberculosis. I have observed orthostatic albuminuria in two young men with grave forms of congenital heart disease.* Dr. Mackenzie Wallis has kindly informed me that in the albuminuric case to which he referred—a man in whom albuminuria was present for thirteen years without apparently harming him until at last he died at the age of 30 years from uraemia—the albuminuria was not of the orthostatic type, and was almost certainly due to a true chronic nephritis.†

In regard to prognosis (and life assurance) in cases of adolescent albuminuria help can doubtless be obtained from a chemical examination by estimating the relative proportions of serum-albumin and globulin in the urine,‡ but it is of at least as great importance to ascertain whether the albuminuria conforms to the orthostatic type—whether albumin is altogether absent from the urine passed immediately on getting out of bed in the morning—though this latter investigation may give rise to considerable inconvenience if the examinee cannot be trusted.

IV.—*The Presence of Albumin (frequently only a trace) accompanying Minute Quantities of Pus, Blood, or Semen in the Urine.*

The slight opacity in the urine due to the presence of minute quantities of pus or blood, or pus and blood, in the urine may easily be overlooked, or wrongly neglected as of no importance, in examinations for life assurance or appointments such as clerkships, etc. (Naturally in the case of females a difficulty is more likely to arise owing to admixture of the urine with vaginal or slight leucorrhoeal discharge.) The haze which calls for a microscopic examination may be not more than that due to the presence of bacteria in urine from cases of bacteriuria or in urine which is decomposing. I do not know how it compares with the opalescence which, according to Mackenzie Wallis, may exceptionally be observed in urines containing an excess of euglobulin.§ Whenever it is evident by the ordinary tests that an opacity (however slight) in the urine is not due to phosphates (or, after cooling, to urates), a

* A trace of nucleo-albumin in the urine passed immediately on getting out of bed in the morning must not be mistaken for albumin.

† The brachial systolic blood pressure in these cases is in general, I think, slightly below rather than above the average.

‡ The voluntary assumption of a lordotic position of the body (artificial lordosis) is sufficient in some subjects to induce temporary albuminuria. This favours the view that in cases of "orthostatic albuminuria" it is not the ordinary muscular exercise of walking about, but really the upright position of the body, which induces the leakage of albumin in the urine when the affected individual gets up after a night's rest.

§ Cf. also F. P. Weber, Remarks on Orthostatic Albuminuria, *British Journal of Children's Diseases*, London, 1911, vol. viii, pp. 385–390. In this paper I referred to individual cases I had met with.

* F. P. Weber, Congenital Heart Disease, with Extreme Secondary Polycythaemia and Orthostatic Albuminuria, *Edinburgh Medical Journal*, 1909, New Series, vol. ii, p. 18; F. P. Weber and G. Dorner, Congenital Pulmonary Stenosis, *Proceedings of the Royal Society of Medicine*, Clinical Section, London, 1911, vol. iv, p. 85. In connexion with these two cases I find that F. Eigenberger (*Zentralblatt für innere Medizin*, Leipzig, 1920, vol. xli, p. 354) refers to the case of a young man with polycythaemia rubra (secondary to cardiac disease, if I rightly understand the author) in whom the presence of orthostatic (lordotic) albuminuria was discovered; a lordotic position of his body caused his urine to contain albumin, a little blood, and abundant cylindroids.

† Dr. Mackenzie Wallis tells me that though there was well marked *globulinuria* in this case, the patient was observed to have puffiness about the eyes in the early mornings; his brachial systolic blood pressure was constantly 160 mm. Hg, and red blood cells (though no tube casts) were found in the urinary deposit. The case has been described in full by Dr. Ivor J. Davies, *Lancet*, 1920, ii, p. 1249.

‡ Cf. R. L. Mackenzie Wallis, Non-nephritic Albuminuria, *Proceedings of the Royal Society of Medicine*, Section of Medicine, 1920, vol. xiii, pp. 96–104.

§ Mackenzie Wallis (loc. cit., p. 100) writes: "In my opinion euglobulin is really globulin which has associated with it a small quantity of lipoids. In this respect euglobulin is identical with the lecithin-globulin isolated from pseudo-chylous effusions, the degree of opalescence depending on the amount of associated lipoids. This euglobulin is precipitated by acetic acid in the cold, and is, in my opinion, the protein present in the urine which gives this test. An excess of this euglobulin containing excess of lipoids either in the blood, pleural, pericardial, or peritoneal effusions, or in the urine, gives rise to a marked opalescence, and when this globulin is removed then the opalescence disappears." Mackenzie Wallis quotes a case described by Bramwell and Paton (1892), in which actually the urine spontaneously deposited rhombic crystals of globulin. In regard to pseudo-chylous effusions cf. also Mackenzie Wallis and Schölberg, *Quarterly Journal of Medicine*, Oxford, 1910, vol. iii, p. 301; Mackenzie Wallis, *Proceedings of the Royal Society of Medicine*, Medical Section, 1915, vol. vi, p. 135; and H. A. Lediard, Ibid., p. 123.

microscopical examination (even a hasty one, without waiting for a sediment to form and without the help of the centrifugal machine) may prove of extreme value. At examinations for appointments and life assurance the discovery of minute quantities of blood, not sufficient to produce any reddish coloration of the urine, may lead to the detection of renal tuberculosis, as in the case of a young man whom I recently examined for a clerkship. In such cases the correct diagnosis must of course be confirmed by special examinations, such as by cystoscopy and by catheterizing the ureters, to see if only one kidney is affected. On repeated examinations in cases of this class the urine may sometimes be found apparently free from albumin (by the ordinary boiling and acidifying test), though its slight opacity when freshly passed should lead to a microscopical examination being made. On rare occasions, in such cases, even the slight obvious opacity may temporarily be absent from urine, which by microscopical examination of the centrifuge sediment is found to contain minute quantities of blood or pus.

I understand from Dr. Lister (though I have not observed it myself) that the urine at the commencement of an attack of gonorrhoea (congestive stage) may sometimes contain a little albumin even before the appearance of any purulent discharge.

After the subsidence of an attack of haematuria of uncertain causation the presence of a little pus in the urine by microscopical examination may indicate grave disease, such as a malignant tumour involving the pelvis of one kidney.* This whole subject, however, I need not further discuss here.

ON THE ACTION OF CERTAIN SPECIAL PREPARATIONS ON MALARIAL PARASITES AND THEIR EMPLOYMENT IN THE TREATMENT OF MALARIA.

BY

MAJOR J. PRATT-JOHNSON, M.C., D.A.D.M.S. (PATHOLOGY),

MAJOR KENNETH GILCHRIST, M.C.,

AND

CAPTAIN HAY-MICHEL, S.A.M.C.

THESE investigations were carried out at No. 4 General Hospital, S.A.M.C., Roberts Heights, during 1917–19 on malarial patients invalided from the German East African campaign. The majority of the cases were of a severe type, associated with marked anaemia and debility, numerous relapses occurring in hospital while under quinine treatment (25 to 30 grains daily). Of 8,788 hospital cases 61 per cent. showed benign tertian parasites in their peripheral blood, 23 per cent. malignant subtertian, 16 per cent. both benign tertian and malignant subtertian parasites. The average period in hospital and convalescent camp of these cases was fifty-one days, during which time the blood was examined at weekly intervals and the patients kept on routine daily quinine treatment. Parasitological relapses occurred during this period of observation in 24 per cent. of the benign tertian cases, 11 per cent. of the malignant subtertian cases, and 39 per cent. of the mixed infections. The circumstances under which these cases contracted malaria (a particularly strenuous military campaign in the tropics) suggested a special terminology to meet this resistant clinical condition—namely, "campaign malaria," which apparently owes its intractability to repeated reinfection associated with severe physical strain in unacclimatized individuals only partially protected from a tropical climate and frequently insufficiently supplied with suitable food.

The frequency with which relapses occurred and the slowness with which these patients recovered a condition of good health emphasized the importance of testing any remedy which might cut short the period of treatment necessary and reduce the number of relapses. Accordingly these investigations were initiated, with the object of providing if possible a more effective treatment. It is not proposed to deal in this paper with the comparative studies made of the results of treatment of different infections with varying doses of quinine administered by the oral, intramuscular, and intravenous routes. The practical outcome of this work, however, was the adoption of a standard treatment for all average cases of malaria. This treatment consisted of 30 grains of quinine in solution by the mouth daily for three weeks, followed by 20 grains daily for one month and subsequently 10 grains daily for two months.

NEO-SALVARSAN, SALVARSAN, NEO-KHARSIVAN, KHARSIVAN, GALYL.

In view of the debilitated condition of many of the cases selected for treatment it was necessary to exercise the greatest care in the employment of these toxic preparations. Accordingly the patients were specially prepared, and the dose of the "606" preparations employed was invariably about half that dose commonly used for the treatment of syphilis (neo-kharsivan, neo-salvarsan, 0.45 gram; salvarsan, kharsivan 0.3 gram; galyl 0.2 gram).

Until some experience of these preparations had been obtained in malarial patients it was customary at first to give intravenous injections at weekly intervals. Subsequently, however, it was found that intravenous injections could with safety be given on alternate days for three or four injections, and in one of the cases reported in this series fourteen intravenous injections of 0.2 gram galyl were administered during an inclusive period of twenty-two days, as many as five injections being given on successive days without any obvious harmful effects.

During the past three years some thousands of intravenous injections of these preparations have been administered in malarial subjects without a single fatality. It is therefore clear that the employment of intravenous injections of the above preparations in malarial subjects is not attended by any appreciable or special risk, provided the doses and methods recommended are used and the precautions enumerated are fully observed.

Apart from the general contraindications in regard to the employment of these preparations commonly recognized when considering the treatment of syphilis, it is necessary specially to consider the following points in regard to the employment of these preparations in malarial subjects.

(*a*) *Tachycardia and Dilatation.*—These are symptoms of the disease resulting from anaemia and toxaemia. They improved, however, rapidly as a result of intravenous injections of salvarsan and galyl, and in 154 cases subjected to this treatment, the majority of whom had some cardiac embarrassment, not a moment's anxiety on this score was experienced.

(*b*) *Pyrexia.*—Some observers have held that following an injection of "606" or galyl the temperature often rises 1 to 1.5 degrees, sometimes accompanied with slight rigor, nausea, and vomiting as part of the general reaction to the drug. In a series of over 790 injections these phenomena were observed only seven times with the above doses.

(*c*) *Renal Complications.*—As these drugs are toxic, it is necessary for the patients' safety that they should be eliminated fairly rapidly. Where, therefore, there is a history of recent nephritis, or where the symptoms of such a condition are present (albumin, oedema, etc.) an injection should not be given.

(*d*) *Gastro-intestinal Conditions.*—As vomiting is also a fairly frequent symptom of reaction after injection, severe vomiting, diarrhoea, or obstinate constipation should be corrected before an injection is given.

Preparation of the Patient.

Sufferers from malaria should have complete rest in bed for at least twenty-four hours before an injection. Their diet should be light and easily digested during this period. The bowels should be opened either by a purgative pill (for example, pil. hydrarg. coloc. co. with hyosc.) the previous night, followed by saline (mist. alba) the following morning or by an enema in the morning before injection. A light breakfast—one egg, two slices of toast, and one cup of tea—given at least four hours before injection, may be allowed, but no food should be

* In one such case, a man, aged 33 years, under my observation in 1918, the patient (owing to some mistake) was forced to join the army, but was soon transferred to a military hospital and then set free. He died in March, 1920, and the *post-mortem* examination showed a malignant tumour and pyonephrosis of the left kidney, with secondary tumours elsewhere in the body. This was Case II in a paper which I published (in regard to another subject) in the *International Clinics*, Philadelphia, 1920, series 30, vol. iii, pp. 43–51.

given again till four hours after the injection, when a cup of tea with a slice or two of bread-and-butter may be taken. A complete meal should not be allowed until next day. A sample of urine of the preceding twenty-four hours should be tested on the morning before injection, and if this is found to contain albumin or sugar the injection should not be given.

Considering the small doses that are advocated in these cases the above precautions may seem excessive, but in view of the great debility of these patients and the frequency of dosage advocated, it is important to carry out such preparatory measures if untoward incidents are to be avoided.

Reactions.

Some of the reactions have been alluded to. With such small doses, 0.2 or 0.3 gram, anything approaching a marked reaction has not been seen. A few cases complained of congestive headache. In 650 injections of galyl, only on one occasion was an actual rigor observed to follow an injection, and as in this case a tertian paroxysm was expected on this day, it was in all probability quite unconnected with the injection. Vomiting was observed in one case in which 0.5 gram salvarsan had been given.

Results.

The total number of patients treated for purposes of investigation was 154. The clinical action of "606" preparations may be considered under the following headings:

1. *Nervous.*—Headache frequently disappeared not to return even with subsequent rigors.

2. *Pyrexia.*—Where rigor and pyrexia followed an injection at the usual period of the vegetative cycle of the parasite they were invariably milder in degree, and frequently aborted—in fact, experience has shown that these drugs are of considerable diagnostic value in differentiating the two main types, benign and malignant, the former being almost invariably aborted.

3. *Tonic Effect.*—Generally speaking, the tonic effect of "606" preparations is well marked, and rapidly becomes apparent; anorexia, lassitude, and debility soon give way to a feeling of well-being, while tachycardia and shortness of breath, consequent upon anaemia and cardiac dilatation, rapidly improve.

4. *Spleen.*—Splenic enlargements under the influence of these drugs disappear with remarkable rapidity.

5. *Liver.*—In cases where enlargement of the liver was marked with icterus of skin and conjunctivae, rapid improvement has generally followed a single injection, bilious vomiting, furred tongue, and foul breath clearing up within a short period.

6. *Lungs.*—A number of men with malaria were admitted suffering from a dry bronchitis with severe cough. It was noted that rapid improvement followed an injection, though the same frequently occurred after a few doses of quinine had been taken.

Action of "606" Preparations on Malarial Parasites.

1. *Benign Tertian Malaria.*—As a result of numerous observations on the blood after intravenous injections with the above preparations in the doses advocated, without any other medicinal treatment, it was definitely determined that "606" preparations exert a marked parasiticidal action on the benign tertian parasite. Thick blood smears showing numerous parasites commonly become negative within twenty-four to thirty-six hours. No appreciable difference was observed in these different "606" preparations, the result of treatment being closely similar in each case. The action of these preparations is closely analogous to the action of quinine, although "606" preparations appear to be more active and to produce much more rapid effects, especially in chronic resistant infections associated with enlarged spleen and marked anaemia.

2. *Malignant Subtertian Malaria.*—The action of "606" preparations on tropical malaria exhibits a very marked difference from their action on benign tertian malaria. Observations showed that "606" preparations have no definite parasiticidal action on any stage of the malignant subtertian parasite. When employed, however, in association with quinine, these preparations appear to render the parasites more vulnerable to the action of quinine, the infection being controlled and cured with smaller doses of quinine than would be required without these preparations. The employment of "606" preparations in malignant subtertian malaria appears to be specially indicated in resistant infections with marked anaemia and cachexia, owing to their action in breaking down resistance to quinine and their tonic effects.

Relapses.

The selective action of "606" preparations for benign tertian infections is very marked. In spite of this, relapses are common even when this preparation is combined with quinine treatment. Total eradication is doubtless possible with "606" preparations alone in early simple infections, but the majority of the cases treated were chronic cases resistant to treatment, of which a considerable number relapsed even while under treatment in hospital. Relapses, however, are much less frequent when several injections are given on alternate days in addition to quinine treatment.

It is not possible with "606" preparations alone to effect Ehrlich's *therapia magna sterilisans* except in the earliest infections. Freedom from relapses and total eradication of the infection cannot therefore be promised after treatment with numerous intravenous injections of "606" preparations.

In malignant subtertian malaria quinine must be employed in addition, as "606" preparations have little direct destructive action on the parasites. When these preparations are used in addition to quinine the action of the latter is intensified, and the progress towards recovery is much more rapid.

Detection of Parasites.

The thick smear was always employed in searching for parasites in the peripheral blood; it is a rapid and efficient method of controlling the results of treatment. It is possible to demonstrate parasites easily by this method when it may be impossible to find them on examination of thin films even after a prolonged search. Using this method it was found that in 4,043 cases of malaria admitted into hospital with positive thick smears, 23 per cent. showed parasites persisting in the blood on the eighth day of treatment with an average daily dose of quinine of 23 grains. The average persistence of parasites in thick smears in these cases was nineteen days. This fact indicates the severe nature of the cases and demonstrates the slow action of quinine in reducing heavy infections in markedly debilitated individuals. Resistant benign tertian infections responded readily to "606" given intravenously together with quinine by the mouth owing to the parasiticidal action of "606" on the benign tertian parasites. Intramuscular injections of soamin and quinine orally offered no advantage over quinine and inorganic arsenic in these resistant cases, as the following statistics indicate:

Results of re-examination of blood, after an average interval of eight days, in cases of benign tertian malaria, positive on first examination—34 cases treated with quinine and an average of one injection of "606"—compared with 3,171 cases treated with quinine only, and 44 cases treated with quinine and an average of two injections of soamin. In the 44 cases treated with quinine and soamin the blood was re-examined after an average interval of 6.5 days.

	Quinine +606.	Quinine.	Quinine and Soamin.
Number of cases positive on first blood examination	34	3,171	44
Number positive on re-examination ...	Nil	710	10
Percentage of cases positive on re-examination	Nil	22	22.7
Average daily quinine (grains) in interval before re-examination	11.5	23.2	23.6
Average persistence of asexual forms in cases positive on re-examination	Nil	19	19.2

Mixed Infections.

The failure of treatment with "606" preparations alone to prevent relapses in mixed infections, even when the treatment is pushed, is shown by the following cases:

Case 1.—Mixed infection (benign tertian and malignant tertian). Intravenous injections of 0.20 gram galyl on the 1st, 2nd, 3rd, 4th, 6th, 7th, and 8th days. Parasite relapse of

malignant rings on the 16th day, and benign tertian parasites together with malignant rings on the 24th day. A few crescents were also found on the 21st day. No other treatment given.

Case 2.—Mixed infection (benign tertian and malignant tertian). Intravenous injection of galyl 0.30 gram on the 1st day. Parasite relapse of benign tertian on the 12th day. Further injections of galyl 0.20 gram on the 17th, 19th, 21st, 23rd, 25th, 29th, 31st, and 33rd days. Parasite relapse on the 39th day of benign tertian parasites. Crescents were daily found in the blood from the 21st to the 39th day. No treatment other than galyl given during the period of observation.

Case 3.—Mixed infection (benign tertian and malignant tertian). Intravenous injections of galyl 0.20 gram on the 1st, 2nd, 3rd, 5th, 6th, 7th, 9th, 14th, 16th, and 9th days. Parasite relapse on the 20th day, benign tertian parasites and numerous malignant rings. Crescents found daily from the 5th to the 15th days, and not found from the 16th to the 23rd days. Treatment, galyl only.

Case 4.—Mixed infection. Intravenous injections of galyl 0.20 gram on the 1st, 2nd, 3rd, 4th, 6th, 7th, 8th, 14th, 15th, 16th, 17th, 18th, 20th, and 22nd days. Parasite relapse with numerous malignant rings on the 14th day to the 23rd day. On the 24th day benign tertian parasites were also found. Crescents were found almost daily. Treatment, galyl only.

SOAMIN.

Numerous intramuscular injections of soamin were administered in severe resistant cases of various types of malaria. Soamin exhibits no parasiticidal action on the parasites of either benign tertian or malignant subtertian malaria. Its beneficial action is confined to the breaking down of the resistance of parasites to quinine.

TARTAR EMETIC IN "CRESCENT INFECTIONS."

A small series of twenty-seven cases of malignant subtertian malaria with crescents in finger blood were treated by tartar emetic injections, the total number of injections administered being 137.

No demonstrable effect attributable to the injections was observed on crescents. Even repeated doses of 20 cg. of tartar emetic did not appear to produce breaking down of the crescents in the blood.

No advantage as to the rapidity of elimination of crescents from the blood could be demonstrated between a group of cases treated by quinine only and a group of cases treated by quinine together with an average of five injections of tartar emetic. The most rapid and certain method of eradicating crescents from the finger blood is to treat the patient thoroughly with quinine (30 grains daily). Under such treatment crescents disappear in an average of fifteen days. Supplementary treatment with arsenic and iron is indicated, and in unusually resistant cases intravenous injections with "606" preparations, or intramuscular injections of soamin, are advisable to break down the resistance to the action of quinine, of the "ring" forms from which the crescents arise.

In regard to the prevention of relapses, these have occurred in both benign tertian, malignant subtertian, and mixed infections after treatment with an average of four to six injections of tartar emetic in each infection. Tartar emetic has no demonstrable effect on the asexual forms of the parasites of either benign tertian or malignant subtertian infections, and exerts no influence on the clinical course of the disease.

MERCURY AND ANTIMONY OINTMENT.

A small series of eleven cases were treated with quinine and inunctions with an ointment composed of antimony 2 parts, mercury 30 parts, lanoline 68 parts. About 1 drachm was rubbed in daily for fifteen minutes. Inunctions were continued for an average of twenty-five days. The inunctions did not appear to have any direct action on the parasites or to intensify the action of the quinine which was administered at the same time. No therapeutic effects were observed.

CONCLUSIONS.

1. Neo-salvarsan, salvarsan, neo-kharsivan, kharsivan, galyl, administered intravenously, may be employed with safety in the treatment of all forms of malaria, provided the doses and methods recommended herein and the precautions enumerated are fully observed.

2. These preparations, in the doses recommended, exert a marked parasiticidal action on the benign tertian parasite, thick blood smears showing numerous parasites usually becoming negative within twenty-four to thirty-six hours.

3. These preparations have no definite parasiticidal action on any stage of the malignant subtertian parasite. When used in addition to quinine, the action of the latter is intensified and the progress towards recovery is much more rapid.

4. Generally speaking, the tonic effect of these preparations is well marked in all cases of malaria; anorexia, lassitude, and debility soon give way to a feeling of well-being, while tachycardia and shortness of breath, consequent upon anaemia and cardiac dilatation, rapidly improve. Splenic enlargements disappear with remarkable rapidity.

5. The employment of these preparations is recommended, in addition to quinine treatment, in chronic resistant infections and malarial cachexia. Three or four injections at weekly intervals are recommended. Freedom from relapses cannot be promised even after numerous intravenous injections. In regard to the preparation of the solutions and technique of administration, the usual methods are followed in each case.

6. Soamin exhibits no parasiticidal action on the parasites of either benign tertian or malignant subtertian malaria. Its beneficial action is confined to the breaking down of the resistance of chronic infections to quinine.

7. Tartar emetic has no demonstrable effect on the sexual or asexual forms of the parasites of either benign tertian or malignant subtertian malaria, and exerts no influence on the clinical course of the disease. The most rapid and certain method of eradicating crescents from the finger blood is adequate quinine treatment (30 grains daily) and arsenic.

8. Inunctions of mercury and antimony ointment do not appear to exert any therapeutic action in malaria.

This paper is included in a report on "Malarial Research in South Africa during the War," to the Minister of Defence, Union of South Africa.

Acknowledgements are due to Colonel P. G. Stock, C.B., C.B.E., S.A.M.C., Director of Medical Services, for permission to publish this paper; Colonel G. H. Knapp, D.S.O., Deputy Director of Medical Services; and Lieut.-Colonel Vaughan Williams, D.S.O., o/c No. 4 General Hospital, and Major J. C. Venniker, S.A.M.C., without whose hearty co-operation and support it would not have been possible to carry out this work during a period of considerable pressure on the military hospitals.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SPASMODIC HICCOUGH.

IN view of the recently reported plague of hiccough in Montreal and Paris an account of two cases which have recently come under my care, and are, so far as I am aware, the first cases to be noted in England, may be of interest to your readers.

Case 1.—A man residing near high downland, accustomed to easy open-air life, who had not recently been away from the district, presented as the initial symptoms frontal headache and slight rise of temperature. On the second day a cough developed, and the hiccough first began at the end of a fit of coughing and lasted an hour. In an hour's time another attack occurred, lasting an hour and a half. These recurrent attacks continued for two days. On several occasions the hiccough continued until retching was set up, and, although no material was vomited, the act of retching appeared to stop the hiccough for a time. It was noted that the hiccough was more violently spasmodic than is usual in an ordinary mild persistent attack. The temperature throughout remained at 101° F., and finally dropped by crisis. The frontal headache continued and heavy night sweats occurred. After trying all the usual homely remedies my advice was sought at the end of the first day, and a mixture containing potassium citrate, bismuth subnitrate, tincture of belladonna, and dilute hydrocyanic acid was given every four hours. Very little relief was obtained, and the attack finally yielded at the close of the second day to a mixture of sodium, potassium and ammonium bromide, leaving the patient weak and shaken.

Case 2.—A young man employed in business near the docks. The symptoms differed from those in the previous case in that a smart attack of diarrhoea occurred coincidently with the onset

of the hiccough. Frontal headache and temperature as in Case 1. No night sweats. The attack did not yield to bromides, and only subsided when benzyl benzoate was given; duration thirty-six hours.

Clifton, Bristol. URQUHART BARTHOLOMEW, M.R.C.S.

FATAL POISONING FROM INHALATION OF ACID FUMES IN A LABORATORY.

AN engineering student was engaged on December 8th, 1920, in dissolving various metallic substances in mineral acids. The exercises for the day consisted in the identification of pyrolusite (MnO_2), stibnite (Sb_2S_3), and bauxite ($Al_2O_3+Fe_2O_3$). The mineral acid which was advised for employment was hydrochloric acid, but according to the patient's own statement he made use instead of sulphuric acid.

He placed a vessel containing this acid and one of the metals in an ordinary fume chamber, and on going to remove it about an hour later he inadvertently bent too much into the chamber and inhaled the fumes. He felt, for the moment, sick and dizzy, but experienced no further ill effects till the middle of the following night, when he began to suffer from severe and rapidly increasing dyspnoea. Next day, December 9th, he was seen by Sir Robert Woods, who found him suffering from very severe oedema of the larynx and pharyngeal tissues. Scarification and other treatment was adopted, with the result that the oedema rapidly subsided, but as his general symptoms pointed to severe illness, he came under my care on December 12th.

On this date he looked anxious and ill, there was a slight icteric tinge in the sclerotics, the tongue was furred, the throat still showed traces of the recent severe inflammation, the heart sounds were normal but weak, the pulse was feeble (120 to the minute), and the respirations were rapid. Mild diffuse bronchitis existed, with crepitus, and a pleural rub at the base of the left lung; the abdomen appeared normal. The urine was scanty, highly albuminous, with a faint biliary reaction. The temperature on this date was 103° F. Treatment by alkalis, glucose, oxygen inhalations, etc., was ordered, and the next morning the patient was somewhat better, and was bringing up freely a lemon-yellow coloured expectoration. The improvement persisted for a couple of days, but was then followed by rapidly increasing weakness and loss of weight, and finally a lethal termination on December 19th, just ten days after the initial misadventure. During the last few days the liver became much enlarged, there was persistent diarrhoea of a thin, watery character, fall of temperature to subnormal, extreme and rapid emaciation, cyanosis and rapid breathing, without increase of pulmonary signs.

The inability to state exactly what fumes were the cause of the trouble diminishes the value of this report, but it is nevertheless placed on record owing to its obvious importance to laboratory workers. The professor in charge of the laboratory informs me that the same routine of work has been carried out by classes for years, and that he has never before heard of even trifling malaise. The delay in the development of the symptoms is also worthy of note.

Dublin. T. GILLMAN MOORHEAD, M.D.

PATENT DUCTUS ARTERIOSUS.

IN your issue of December 25th, 1920, I have read the very interesting account by Dr. Carey Coombs of his four cases of patent ductus arteriosus. In the *Archives of the Middlesex Hospital*, vol. xxxi, No. 13, December, 1913, I reported three cases, all proved by autopsy, of patent ductus arteriosus, with no other lesion present, but all in children under one month old. In all these cases no murmur of any description was heard, and the attacks of cyanosis—varying in length, but completely passing off for longish intervals—were the marked feature of these cases. Whilst serving in the army in Malta I was asked by Sir Archibald Garrod to see a baby with a view to performing tracheotomy, but it was finally decided against, and at the autopsy a patent ductus arteriosus was found. No bruit was present in this case, but cyanosis and dyspnoea were the marked features.

Evidently, from Dr. Coombs's observations, a bruit develops if the individual lives to adult age, and endocarditis is added to the already patent ductus arteriosus. Without the endocarditis I feel sure no bruits of any character are present.

Eastbourne. E. WILSON HALL, F.R.C.S.Edin.

Reports of Societies.

ALBUMINURIA IN RELATION TO LIFE ASSURANCE.

AT the meeting of the Assurance Medical Society on January 6th a discussion on "Albuminuria in relation to life assurance, especially in adolescents," which had been adjourned from the meeting of November 3rd, 1920, was resumed by Dr. F. PARKES WEBER, whose paper appears on page 78. The President of the Society (Dr. T. D. LISTER) was in the chair.

Sir JAMES GALLOWAY related his experience with some cases of orthostatic or, as it might perhaps be called, harmless albuminuria. In the early days of the war, when much difficulty arose from what was called "trench nephritis," he had a conversation at the front with Sir Wilmot Herringham. The scare about trench nephritis had caused a great many examinations to be made, and a certain number of men were found to have albuminuria, which was not surprising in view of the campaigning conditions. But experience showed that a large number of cases with albuminuria which it had been supposed might lead to troublesome results were of this harmless type, and a more extended investigation later on, when the casualty clearing system had further developed, made it possible to define such cases. After a short rest and a period during which they were under careful scrutiny some of these men were passed again for service, and were kept right, at all events for the period of the war. He would not say that even in these cases there was no subsequent trouble, for he did not quite agree with Dr. Parkes Weber as to the total harmlessness of the condition. But the number of men suffering from this orthostatic albuminuria was very much larger than might have been concluded from the experience of civil practice. Great care was necessary in arriving at a diagnosis in such cases. If the question of syphilitic infection were raised, as occasionally happened in such cases, grotesque errors in diagnosis might be made, leading to the use of drugs such as salvarsan in the excitement of the occasion—not a very prudent plan of treatment. The speaker had thoroughly tested such cases, examining the urine before and after exertion. One form of exertion was to walk round the Outer Circle of Regent's Park in a given time, and it was found that after this exercise the albumin was increased in quantity, although on rising in the morning it had been absent or negligible. Another case which came under his care was that of a pensioned soldier who had been discharged on account of nephritis. Albuminuria had been found early in his war service, and he had been sent home, and after a rest sent out again, but finally discharged. This man, who was of the lanky, flat-chested type, was evidently one of the orthostatic cases, and was now practically albumin-free. But the previous diagnosis and treatment had had the effect of giving him a nervous disinclination for much work. Nevertheless, a man of this type, quite apart from his physique or his neurasthenia, was not to be regarded as a first-class life, because the functions of the kidney could not be considered as properly performed.

Dr. H. BATTY SHAW said that it seemed to him they could not avoid accepting the position that pre-renal albuminurias or proteinurias were due to nephrotoxic substances brought to the kidney by the blood stream, and not generated in the kidney *ab initio*. If this was so obvious an explanation of cases of proteinuria accompanied by coarse changes in the kidney, was it not probable that the intermittent temporary or occasional proteinuria of adolescents, or of persons of any age, was also due to the operation, in a large majority of cases, of foci of infection at a pre-renal site? These, while incapable of producing fever with its associated manifestations, were capable on occasion of producing temporary disorder of function in the renal parenchyma with consequent albuminuria. That orthostatic proteinuria existed had been accepted too readily as proof that the proteinuria, at any rate of adolescents, was mechanical in its origin. Foci of inflammation at any pre-renal site were quite capable of causing proteinuria, whether temporary or for all time, slight or severe, and it was safe to assume that the foci of infection which only produced proteinuria in young

persons on assuming the erect posture need be no bar to insurance. Dr. Shaw detailed a series of observations which went to show that proteinuria might be constantly present although the percentage of damaged glomeruli of the kidney was very low, and might be only occasionally present in other cases in which the percentage of damaged glomeruli was large; his conclusion was that the degree of proteinuria was not proportional to the number of damaged glomeruli, and must be assumed to depend rather upon some agency present in the blood which was capable of altering the glomerular elements sufficiently to allow proteinuria to occur, without, however, altering them structurally. Dr. Batty Shaw's practical suggestions were as follows:

Cases of adolescent proteinuria—that is, in persons under 30—showing no other abnormality than proteinuria, which was absent when the urine was examined after a night's rest, should be accepted at ordinary rates. If the proposer showed proteinuria after a night's rest, his insurance should be postponed, or he should be given a short endowment with a load.

If the adolescent proposer showed proteinuria and hyperpiesis after a night's rest he should be rejected.

If a proposer over 30 years of age showed nothing else but proteinuria, which disappeared after a night's rest, he should be accepted, but with a load; if the proteinuria persisted after a night's rest he should be postponed; and if proteinuria persisted and was accompanied by hyperpiesis, and the latter was not abolished by a night's rest, he should be rejected.

Dr. H. W. COLLIER mentioned the case of a man, 56 years of age, who had lived an exceedingly active life, and was of good family and personal history, who proposed himself for assurance. Thirty years previously he was declined on account of albuminuria, but two years afterwards was accepted by another company at ordinary rates, the medical examiner, apparently, finding no albumin. The man himself knew, however, that throughout his life, whenever his urine had been tested, albumin had been found save on that one occasion. The speaker recommended his acceptance, but with the addition of five years to the age, and this the man declined, as he considered himself in every way a first-class life.

Dr. H. M. ABEL thought the calcium lactate method of testing likely to be of much use, but it was a treatment, and would usually involve giving doses—and not small doses either—to another doctor's patient. Would it not be good for the office, the proposer, and the doctors, if an arrangement could be made whereby, in special cases only, the examiner could get into touch with the doctor in charge of the case? On the general question, he was of opinion that any given case which was proved to be adolescent postural simple albuminuria, with all other conditions favourable, should be accepted at ordinary rates.

Dr. F. G. CHANDLER mentioned that one of the largest organizations in this country, employing great numbers of boys, who were retained in its service for the rest of their lives, subjected the boys to careful medical examination, and kept a complete record of their sick leaves. Not a few of the boys had albuminuria; at one time such boys were rejected, but for twenty-five years now they had been accepted, and the record of health of these boys was in every respect as good as that of the others. The albuminuria in some cases had persisted up to manhood. It was proved, therefore, that there existed an albuminuria which was not pathological. The speaker maintained that—provided there was no abnormality in the appearance of the person, his past history, and the state of the cardio-vascular system, also in certain urine tests such as for casts and the type of protein—they were justified in passing the proposer as a first-class life even though he had a trace of albumin.

Dr. WITHERS GREEN protested against the use of the terms "orthostatic" and "adolescent," and suggested in their place "functional," "physiological," and "perambulatory." The word "orthostatic" was meaningless now, and would be a difficulty for those who came after.

Dr. HINGSTON FOX, who had opened the subject at the first meeting, said that one thing which had been gained by the discussion was the fuller recognition of the fact that a favourable and harmless type of albuminuria really existed independently of disease of the kidney. He was sorry Sir James Galloway should have repeated the old heresy that in such cases the kidneys could not be quite sound. He did not exclude the phenomenon of septic absorption, as suggested by Dr. Batty Shaw, but in many of the cases he had seen, when the persons concerned were in robust health with good digestions and capable of much exertion, it was difficult to believe that the passage of a little albumin was due to any septic absorption; it was much more probably due to certain functional states of the blood circulation. He saw nothing better in the way of a name than the "albuminuria of adolescence." It implied no theory and begged no question as to physiological or functional disturbance. What were the causes which interfered with the normal defensive action of the kidney cells in keeping albumin out of the urine? It seemed to him very reasonable that the conditions of blood pressure and of the blood itself in respect to its coagulating power and thinness would be likely to interfere with that defensive property; and Sir Douglas Powell's reminder at the last meeting that the very structure and purpose of the glomeruli was to produce a retardation of current for the functional purposes of the kidney was rather illuminating from that point of view, because if that blood secretion were too much retarded, surely the cells could no longer work as they ought to do.

A CASE OF PLAGUE IN DUBLIN.

AT a meeting of the Medical Section of the Royal Academy of Medicine in Ireland, held on December 10th, 1920, Dr. H. DRURY and Sir ARTHUR BALL reported a case of bubonic plague which had occurred in Dublin.

The woman, aged 25, was seen by Sir Arthur Ball, who found a gland in the groin the size of a walnut, with a history of intense local pain of three days' duration. On admission her temperature was 104°. The skin over the gland was not inflamed. The patient was covered with flea-bites. The excised gland was examined by Dr. Synge, who found that it contained large numbers of plague bacilli.

When Dr. Drury first saw the case, on the third morning after operation, he was struck with her typhus-like aspect. The patient's temperature was then 102°, her pulse-rate 100 but very weak, her respirations 22. Except for a deep and exquisitely tender swelling, 2½ in. by 1 in. immediately above and parallel to Poupart's ligament, the abdomen was normal. There was no vesicle or pustule to indicate the site of inoculation. On the sixth day of the disease the temperature began to fall steadily, rising again on the eleventh day to 102°, and becoming definitely normal on the thirteenth day. The swelling above Poupart's ligament gradually subsided.

Dr. BIGGER, in describing the precautions taken by the authorities to prevent extension of the disease, said that as no case had occurred in Dublin for 200 years, an entirely new problem was presented. Some connexion with the shipping of the port might have been expected, but this patient had none, except that she lived near the docks. She had, however, a pet cat which slept in her bed, and which was in the habit of disappearing at intervals. This animal might have been infected by rat fleas, but it was not possible to ascertain the fact owing to its prompt destruction by the sanitary authorities. No unusual mortality had been noticed among the rats at the docks, and the specimens examined were negative as regards plague. The usual measures of disinfection were adopted, and the health authorities in England and Scotland were notified. As no further case had been reported after the lapse of nearly two months, this would probably prove an isolated case.

Dr. W. F. LAW had never seen a case of plague in his colony (British Guiana), but it had occurred in Trinidad on two occasions to his own knowledge. He was surprised to hear that direct infection played such a prominent part; he thought the rat flea was generally accepted as the infecting agent.

Sir J. W. MOORE thought the introduction of plague into this country quite a possible event. A relative in the Royal Navy had told him on his return home after visiting Algiers and Lisbon that plague existed in Algiers and in Lisbon, both places in fairly close communication with the British Isles.

Dr. SPEARES instanced an outbreak in a family in Malta, two members of which died before the diagnosis was made. The laboratory attendant punctured his finger during an autopsy on one of the cases, developed plague, and died.

Dr. SYNGE described the gland removed by Sir Arthur Ball:

It was about 1½ in. in length. It was oedematous and haemorrhagic. Smears from the gland showed very large numbers of Gram-negative bacilli. These bacilli were short and thick, and

stained darkly at both poles, the centre of the bacillus remaining unstained. Cultures on blood agar after thirty-six hours showed small whitish-grey colonies. These consisted of bacilli similar to those found in the direct smears of the gland. Cultures on salt agar after three days showed marked involution forms. A guinea-pig injected with material from the gland died after seven days. It showed general oedema with areas of congestion. The glands in the groin were much enlarged, oedematous, and haemorrhagic. The spleen was greatly enlarged and studded with large numbers of white spots. Smears of the glands and spleen, and cultures from the glands, spleen, and heart's blood all showed bacilli similar to those found in the patient's gland. A culture from the patient's blood on the seventh day of her illness was positive, but bacilli were not seen in a direct examination of blood films.

The morphological and cultural appearances and the result of animal inoculation proved that the bacillus found in the patient's gland was *B. pestis* and that the patient was suffering from bubonic plague.

Dr. DRURY, in reply, said that the entire credit of the case was due to Sir A. Ball, who recognized the inflamed gland as something unusual, and to Dr. Synge, who had the courage to make what appeared at first a very improbable diagnosis. He did not suggest that direct infection in plague was a common route, but it had been shown to occur. He thought antiplague serum more useful in prophylaxis than in treatment.

"VICARIOUS MENSTRUATION."

A MEETING of the Obstetrical Section of the Royal Academy of Medicine in Ireland was held on December 10th, 1920, with the President, Dr. E. HASTINGS TWEEDY, in the chair.

Dr. BETHEL SOLOMONS read a paper on herpes as a type of vicarious menstruation. He reported a case which had been referred to him by Dr. Wallace Beatty.

The patient was a girl aged 27, who complained of getting a sore on the left cheek every month, which Dr. Beatty described as catarrhal herpes. Bimanual examination under anaesthesia revealed absence of the essential genitalia. It was thought well to confirm this diagnosis, and the abdomen was opened. It was then seen that a candle-like structure passed from one internal abdominal ring to the other, and that the uterus, tubes, and ovaries were absent. On a further search, an ovary of normal size was found attached to a very thin fold of peritoneum, which was in such a position that it might have been intended to represent the broad ligament, and the ovary was anterior to this. There was no ovarian or ovario-pelvic ligament, and the ovary was obviously obtaining its blood supply from the peritoneum in which it was nestling.

Dr. Solomons, having discussed the question, considered that the case might be ranked as one of vicarious menstruation.

Dr. SPENCER SHEILL agreed with many present-day authorities that vicarious menstruation did not exist. In cases of pink discharge coming monthly from axillae neither red cells nor haematin were found in it. He looked upon herpes as a very common accompaniment of menstruation, as were headaches, swellings, etc. These symptoms increased in menstrual derangements, and were merely manifestations of vasomotor disturbance due to internal ovarian secretion. Where periodical haemorrhages occurred—for example, epistaxis—local causes had invariably been found which, when treated, removed the so-called vicarious menstruation.

Mr. A. K. HENRY said that menstruation involved notable vasomotor changes, and these were controlled by the autonomic nervous system, a system which, taken as a whole, was concerned with widespread reactions. Dermographism, for example, was described as being specially pronounced in certain individuals during menstruation, and it was possible to account for this, and for catamenial herpetic eruptions, by a diffusion of exaggerated vasodilator response, or, as in Dr. Solomons's case, by a complete directing of vasomotor effects into extragenital channels. In dermographism urticaria was simulated, while in herpes the results of vasomotor activity proceeded to the formation of vesicles.

Dr. SOLOMONS, in reply, said he was one of those who believed that vicarious menstruation did exist. It was open to question whether his case was actually an example of the condition. According to Dorland's definition, it certainly was. All drug treatments had been tried, and still the herpes recurred every month. He did not remove the ovary, as he thought the absence of its secretion would be more harmful to the girl than the presence of the herpes.

Reviews.

SCURVY.

IN *Scurvy, Past and Present*,[1] Professor A. F. HESS has provided a very complete and well written monograph on this most important subject. At the present time a large amount of literature is rapidly accumulating, greatly stimulated by conditions produced during the war; much of this literature, though valuable in quality, is difficult of access, and this the author has gathered together and placed before the reader in a manner most helpful and interesting. The book is divided into eleven chapters, dealing with history, etiology, the antiscorbutic vitamine, pathology, experimental scurvy, antiscorbutic foods, symptomatology and diagnosis, prognosis, treatment, metabolism, and relation to other diseases. It contains a number of illustrations, diagrams, radiograms, and a good bibliography; it is practically free from errors or omissions.

The very great experience of the author, both in animal experimental work and in clinical observation on infantile scurvy, renders his deductions of the greatest value. At the outset he makes it clear that there is no etiological difference between adult and infantile scurvy, and that the prevalence of the latter is far greater than is generally recognized, owing to the increased use of artificial foods, which are practically all deficient in antiscurvy vitamine. He believes that infants brought up on natural milk do not contract scurvy, and he places a rather higher value on unheated cow's milk than is assigned to it by the workers at the Lister Institute. While recognizing that pasteurized and boiled milk are very inefficient, he holds that the value of milk is not appreciably diminished by the rapid drying method used in the Just-Hatmaker process; if so, it is a very valuable and practical substitute for raw milk. He states that there is no basis for assuming an interrelationship between infantile scurvy and rickets; scurvy, he says, will develop as rapidly when rickets is absent as when present; in practice, however, the two diseases often are present together. For prophylaxis and cure the author would place the greatest reliance on raw orange and lemon juice or strained canned tomato, but he recognizes that germinating pulses and the juice of swedes are of very high value; for infants of one month old he recommends the addition of one teaspoonful of orange juice daily, believing that it is not wise to wait, as is the common practice, until the fifth or sixth month.

There is so much in each chapter of intense interest which might call for comment that it is impossible to do full justice in a review, but we will draw attention to only one more observation—namely, the necessity of early diagnosis in the pre-scorbutic stage, which is far too often unrecognized; frequently, in fact, the diagnosis made is "rheumatic." The experience of Comby with infantile scurvy emphasizes this graphically; of 55 cases, the diagnosis was erroneous in 45, the infants being treated with sodium salicylate when they were in reality suffering from infantile scurvy.

With regard to foods, the important factors are not only the initial vitamine content of the substance, but the methods of preparation, amount of heat used, the time of storing before use, and the amount taken; for instance, though potatoes contain only small quantities of active antiscorbutic substance, yet they are so widely and largely used that they must be classed as most powerful antiscorbutics. This book comes at a very opportune moment, and should be carefully read and acted on, especially by those interested in child welfare at the present time; the author is to be congratulated on the justice he has shown to every known author—no mean accomplishment.

P. W. B.-S.

ORTHOPAEDIC AND RECONSTRUCTIVE SURGERY.

DR. ALBEE'S work on *Orthopedic and Reconstruction Surgery*[2] is one of extraordinary interest to the ortho-

[1] *Scurvy, Past and Present.* By Alfred F. Hess, M.D., Clinical Professor of Pediatrics, University and Bellevue Hospital Medical College, New York City. Philadelphia and London: J. B. Lippincott Co. 1920. (Demy 8vo, pp. 285; 25 figures. 18s. net.)

[2] *Orthopedic and Reconstruction Surgery, Industrial and Civilian.* By Fred. H. Albee, A.B., M.D., D.Sc., F.A.C.S. Philadelphia and London: W. B. Saunders Co. 1919. (Roy. 8vo, pp. 1138; 804 figures. 6 plates. 50s. net.)

paedic specialist and to the operating surgeon. But it is so personal and the lines of treatment advocated are so often contrary to the accepted teaching that it can scarcely be recommended to the student. It deserves to be widely read, and will, no doubt, be widely criticized, for it extends the author's well-known methods of utilizing mechanical assistance in operating so as to make them applicable to the whole realm of orthopaedic surgery. Dr. Albee is a mechanic of first-class ability; his mechanical genius and his manual dexterity have led him to suggest ingenious operations for many conditions which most orthopaedic surgeons will prefer to treat by other and simpler means. But, after all, this is a common failing with pioneers, and the great advances in surgical technique which the author has initiated can be trusted to find their proper place as they are adopted and tested by other surgeons and subjected to external criticism. Each section contains a condensed but adequate account of the etiology, symptoms, pathology, and diagnosis of the condition under discussion, followed by a good account of the principles of treatment and of the methods generally used. The particular methods of the author are described in great detail, and it is here that the book is most open to criticism. Seldom is some clever method of operative treatment wanting; for example, Albee's method of fixing the spine by a bone graft is already well known and tested, but here are methods of fixation by a bone graft in tuberculous disease of the hip, knee, ankle, tarsus, carpus and shoulder. Paralytic scoliosis, congenital dislocation of the hip, congenital talipes, fracture of the patella, and slipping patella are only a few of the other conditions amenable to treatment by the bone graft. The reader must understand that these methods are new, and that he must regard them in a critical spirit and with an open mind, refusing, perhaps, to accept them as of proved efficacy, but pitting them against other accepted methods of treatment. These new methods must thus act as a stimulus to progress in reconstructive surgery. The descriptions throughout are good and the illustrations copious and excellent. There need be no failure to understand the author's methods. Good bibliographies are added in each section, and these and the text show that the literature has been carefully studied and digested. This is particularly true of the accounts of the more rare conditions, which are described with a brief accuracy which is rare in a textbook. The order of the chapters and sections is open to criticism. Thus the first chapter contains a series of valuable general principles, which are, however, placed in a remarkable order so that succeeding paragraphs are headed, "The Position of Neutral Muscle Pull," "The Portable *X*-ray Apparatus," "Ankylosis," and "Referred Pain." Again, the chapters on tuberculous disease are interrupted after tuberculosis of the spine, whilst chapters on bone-grafting, Roentgenology, and the electro-operative bone outfit are inserted. However, these vagaries do not detract from the general excellence of the book, and it may be said that the education of the up-to-date orthopaedic surgeon is incomplete until he has studied it.

Mr. P. B. ROTH'S *Orthopaedics for Practitioners*[3] is a book of a very different sort. For the most part it consists of a brief but clear account of the more common deformities, and the principles of their treatment; but it also is open to the criticism that it is in many respects too personal. The author is too apt to condemn off-hand all those methods of which he does not approve. Scoliosis is to be treated by gymnastic methods; correction in structural cases is, in Mr. Roth's opinion, impossible, and therefore must not be attempted. Such views, if extended to the whole of surgery, would stop all progress. Moreover, certain methods accepted by most surgeons are subjected to equally brief condemnation, and in several instances if the student accepts the author's views without question he might find himself in difficulties with an unbiassed examiner. This work again, then, but for different reasons, needs to be read in a critical spirit; if allowance is made for the individuality of the opinions put forward, it may be recommended as a good elementary manual for the student and practitioner.

[3] *Orthopaedics for Practitioners.* By Paul Bernard Roth, M.B., Ch.B., F.R.C.S. London: Edward Arnold. 1920. (Demy 8vo, pp. 195; 57 figures. 10s. 6d. net.)

THE SEX COMPLEX.

IN the second edition of his book *The Sex-Complex*[4] Dr. BLAIR BELL has made such additions and amplifications as serve to bring it up to date. Despite its vastness and complexity the subject of endocrinology is so fascinating that in the last few years a literature, which is really far too great in bulk, has grown up around it, and it has become a labour worthy of an intellectual Hercules to thresh the grain from the chaff. Verily there is scarcely a subject in medicine about which the same could not with some justice be said in these days, but in regard to this particular one the necessity of a finely balanced judgement in making and in interpreting both the experiments and the clinical observations which must form the foundation of any real progress is particularly apparent, and a large percentage of the literature might with advantage be "scrapped." With feelings such as these one comes to Dr. Blair Bell's book with a sense of refreshment, for here is a successful effort to produce as much of order as is at present possible out of the chaos in one portion of the vast field. Gynaecologists in particular will welcome the work, for in every chapter there is food for thought, and for reasoned speculation as to the probable future developments of their art in relation to functional diseases.

Compared with the first edition, the present volume differs mainly in the matter of additions. The appendices to the former have been embodied in the text, and perusal has been facilitated by the introduction of subject indexes in the margin. The discussion of sexual and reproductive psychoses and neuroses has been considerably elaborated, and the author is to be congratulated on the courage with which he has tackled a delicate and thorny question. We notice that he has given up his former view that the uterus might prove to be an organ of internal secretion. He now regards "uterin" rather as the external secretion of that organ. The claims of the placenta to a place amongst the hormonopoietic glands he also effectively disposes of. All recent reliable gynaecological researches point to the correctness of the view which Dr. Blair Bell emphasizes as to the absolute interdependence of the individual metabolism of a woman and her reproductive metabolism, and in this work he produces much evidence to support his well known contention that in the calcium metabolism is to be found the key to the problem of how the two are linked together.

We hope that the author will reconsider his decision, as stated in his preface, not to publish another edition. This is the sort of book of which gynaecology requires a new edition every four or five years.

A NATURALIST'S STUDY OF SLEEPING SICKNESS.

IN 1910 Dr. G. D. HALE CARPENTER was sent by the Tropical Diseases Committee of the Royal Society to Uganda to study the tsetse fly *Glossina palpalis*, which had been known since 1902 to be the carrier of sleeping sickness. From February, 1911, to the outbreak of war, with an interval in England, his time was spent on the islands in the north-west portion of the Victoria lake. In a book recently published, *A Naturalist on Lake Victoria*,[5] he gives an account of his studies of the fly and records a number of observations on the fauna of the islands. These islands, which vary in size between the area of Rutlandshire and mere rocks, were at the close of the last century supporting a thriving population, but the sleeping sickness epidemic, the existence of which first became known in 1901, carried havoc among the inhabitants, and with a view to saving the remainder the Government, about 1907, removed them all. Apart from their beauty, the islands have an advantage over the mainland in that malarial mosquitos are rare—Dr. Carpenter's party never suffered from fever—and the ticks that suck and incidentally infect cattle, as well as the dreaded *Ornithodorus*, are nearly if not altogether absent; so that apart from tsetse

[4] *The Sex-Complex.* A Study of the Relationships of the Internal Secretions to the Female Characteristics and Functions in Health and Disease. By W. Blair Bell, B.S., M.D. Second edition. London: Baillière, Tindall, and Cox. 1920. (Roy. 8vo, pp. 269; 61 plates. 21s. net.)

[5] *A Naturalist on Lake Victoria, with an Account of Sleeping Sickness and the Tsetse Fly.* By G. D. Hale Carpenter, D.M., B.Ch. London: T. Fisher Unwin, Ltd. 1920. (Med. 8vo, pp. 357; 87 figures, 2 plates, 1 map, 4 charts. 28s. net.)

they are desirable both for man and beast. Knowledge of their natural history, therefore, should be of value as well of interest.

In the first chapter a historical account of sleeping sickness is given, beginning with the description by John Atkins, surgeon, published in 1742, and coming down to the great epidemic in Uganda, which is said to have carried off 200,000 natives, and the more recent discovery of the disease in a rather different form to the south, "*rhodesiense* sleeping sickness," so called from the specific name given to the trypanosome. The next chapter deals with the natural history of the disease, and we find a description of the situtunga antelope, *Tragelaphus spekei*, believed to be a natural host of the "human" trypanosome in that region, and hence an essential link in the chain of endemicity. As one of the results of the depopulation the situtunga, being good swimmers, invaded several islands, where they were previously unknown, and in this way Dr. Carpenter accounts for the infection of three of his native employees. In the chapter on the natural history of *Glossina palpalis* the author incorporates his work for the Royal Society published in the Sleeping Sickness Reports. He studied especially the breeding places, the fly's foes, and the fly's food. He showed that the fly feeds chiefly on the varanus lizard, an amphibious creature which reaches a length of six feet; to a less extent it feeds on the crocodile, the insect avoiding the formidable barrier offered by the scaly skin by choosing an eyelid; even on islands where situtunga are present only one-fourth of the fly's food is obtained from them. The favourite breeding places, Dr. Carpenter found, are raised shaded beaches, well above the water line. He devised a plan of constructing artificial or decoy breeding grounds so attractive that they are preferred above all other places; by a periodical collection of pupae he hopes that an appreciable impression may be made on their numbers. The fly's enemies are not numerous, and there seems to be little likelihood that the state of equilibrium now reached can be upset in this way, unless it be by the aid of parasites of the pupae. The Uganda canoe is described as "a link between a dug-out and a built vessel," but it served for a tour among the northern islands with Mr. Fiske, who was in Uganda on a like mission. The object of the voyage was a comparative survey of the islands, and note was taken of the butterflies "as some sort of index to the general suitability of an island for insect life." In some islands the webs, several feet in diameter, of great spiders, a species of Nephila, were so abundant as to make progress difficult as well as unpleasant. Tsetse was caught on nearly all the islands, and pupae were found on one as small as 200 by 50 yards. There is, Dr. Carpenter says, no exchange of fly between even adjacent islands; they do not cross open water.

In the course of a description of the fauna, the hippopotamus, monkey, otter, mongoose, bat, and situtunga are mentioned. The last, it is said, is multiplying rapidly; it browses on bushes near the water (where the fly feeds upon it) instead of, as elsewhere, keeping to the swamps, and with the change in its habits there seem to be some modifications in its structure—changes in the horns and hoofs. The birds described are numerous, but we must not tarry with them. Crocodiles were scarce, and this was attributed to the absence of man; the varanus preys on crocodile eggs, the natives hunted the varanus for its skin. In the absence of man the varanus has multiplied, and the crocodile families have decreased; from one nest there disappeared in seven days seventy-six eggs. In the description of snakes, which include poisonous snakes and pythons, it is said that the booming noise of the crowned crane is put down by the natives to the puff-adder.

In recording his observations on the coloration of insects Poulton's classification into apatetic or "deceitful" colours, and sematic or "warning" colours, is adopted. Apatetic colours are procryptic or anticryptic. Procryptic colouring conceals its wearer from danger—for example, a green grasshopper among grass—and in these instances, attesting the action of natural selection, there are neuromuscular changes as well. Anticryptic coloration enables animals to obtain their prey: instances are some mantidae. The consideration of aposematic coloration, bright colours which are regarded as "warning," leads on to the subject of mimicry, to which this chapter, and especially the next on the polymorphic butterfly *Pseudacraea eurytus*, form a valuable contribution. Dr. Carpenter, by breeding from known individuals, succeeded in establishing this butterfly as "one of the greatest examples of mimicry in the world" (Poulton). The concluding chapters treat of hymenoptera and sundry insects. A locustid, known to the natives as "semukutu," is of medical interest in that when handled it ejects from the side of the thorax a stream of clear yellow fluid with an acrid smell which causes sores on the skin; Carpenter, however, handled many without ill effect.

The book is well illustrated with good photographs; it contains a serviceable map, and, as Professor Poulton writes, a really wonderful body of observations. The style is attractive, and the work will, we predict, find many appreciative readers.

PRACTICAL PHARMACOLOGY.

PROFESSOR DIXON'S *Practical Pharmacology*[6] is intended for the use of medical students, such as those at Oxford and Cambridge, who do practical work in their pharmacology courses. The experiments described are simple, and have been selected to illustrate well-recognized actions of common drugs in everyday use. None of the experiments are intended for demonstrations on decerebrate mammals. The book contains twelve chapters, dealing with the effects of drugs on organisms and organs of various kinds, their excretion in the urine, and the physical properties of certain medicaments. For the experimental pharmacologist's benefit a useful table of doses for animals is given in an appendix.

Professor Dixon writes clearly and to the point, and his text is full of important practical considerations of service at the bedside as well as in the laboratory. The text is illustrated with a number of serviceable diagrams. The book should be of great assistance to medical students, to whom it may be warmly recommended.

NOTES ON BOOKS.

DR. JOHN HIRST of Philadelphia has prepared a *Manual of Gynecology*,[7] in which much care has been taken in the description of operations, but in some places it might have been better to give more space to the symptoms and signs of the disease and less to the many methods described for its treatment. The student will greatly appreciate the instructions given for the prescription and application of the drugs so frequently used in palliative treatment, for in many textbooks this important subject is merely outlined, and the student is left in doubt as to how treatment is to be applied in practice. Leucorrhoea and vaginal discharges are discussed in a special chapter, and a good deal of space has been allotted to the consideration of diseases of the heart and rectum, on the ground that affections of these organs must often be treated by the gynaecologist. The chapter on electricity, x rays, and radium is well done, but the information given as to organotherapy is chiefly borrowed. The properties of animal extracts are described, and it would appear that the author has a good deal of faith in their value. The book contains many illustrations, none of them exactly artistic, and possesses a good index.

The third edition has appeared of *First Aid in Emergencies*,[8] by Dr. ELDRIDGE ELIASON; it brings up to date this useful little manual for the lay public by the inclusion of new chapters on methods of fixation and dressing of fractures for transportation derived from the lessons of the war, on recent antiseptics as applied to first aid, and on simple precautions in infectious diseases.

The latest edition of the long-established year-book, *Fry's Royal Guide to Charities*,[9] gives in compact form a classified list of the chief charitable institutions, with date of foundation, annual income, objects, etc., and a special feature is made of the editor's guiding notes.

[6] *Practical Pharmacology.* For the Use of Students of Medicine. By W. E. Dixon, M.A., M.D., F.R.S. Cambridge: At the University Press. 1920. (Demy 8vo, pp. 88; 16 figures. 7s. 6d. net.)

[7] *A Manual of Gynecology.* By John Cooke Hirst, M.D. Philadelphia and London: W. B. Saunders Co. 1918. (Cr. 8vo, pp. 465; 175 figures. 12s. net.)

[8] *First Aid in Emergencies.* By Eldridge L. Eliason, M.D., F.A.C.S. Third edition, enlarged. Philadelphia and London: J. B. Lippincott Co. 1920. (Fcap. 8vo, pp. 243; 106 figures. 7s. 6d. net.)

[9] *Herbert Fry's Royal Guide to the Principal London and other Charities.* Fifty-sixth new and revised edition. London: The Churchman Publishing Co., Ltd. 1920. (Cr. 8vo, pp. 350. 2s. net.)

REFORM IN MEDICAL EDUCATION.

[FROM A CORRESPONDENT.]

(*Concluded from page 53.*)

III.

THE TEACHING OF MEDICAL ETHICS.

REFERENCE may next be made to what, in point of time, was the first of the subjects dealt with in the present movement for improvement of medical education. In 1915 the Council adopted the following motion:

"That it be remitted to the Education Committee, with the addition for this purpose of Dr. McVail and Dr. Newsholme, to report to the next meeting of Council on the education of medical students in the ethical relationships of medical practitioners to the State, to their patients, and to each other, and that the Committee have power to make such inquiries on the subject as it deems advisable."

The term "medical ethics" presumably means the application to medical practice of the theory or science of moral obligation. After the Council had adopted the resolution just quoted a letter was addressed to all the teaching bodies, which in most cases elicited the reply that the subject was dealt with in the courses of forensic medicine and public health, but that in a number of instances there had been no regular instruction. The Committee was of opinion that the subject should not be neglected in the education of the medical student, but recognized that the arrangements for conveying the instruction might naturally vary. It therefore proposed that the following general recommendation be added to the resolutions of the Council in regard to professional education:

"Instruction should be given, in the courses of forensic medicine and public health, or otherwise, on the duties which devolve upon practitioners in their relationship to the State, and upon the generally recognized rules of medical ethics. Attention should be called to all notices on these subjects issued by the General Medical Council."

The resolution was adopted by the Council. In November, 1919, it took the matter up again and remitted to the Education Committee to make further inquiries as to the instruction then being given to the students. Replies were received from twenty-six bodies and in general indicated that effect was being given to the recommendation of the Council. The Committee was of opinion, however, that the reminder had been useful in some cases, and a number of the bodies promised to give the subject more attention in the future.

In the communication made to the licensing bodies their attention was directed to the "Warning Notice" issued by the Council so that medical students should have pointed out to them what they had to avoid under its terms. The Notice has had gradually to be made more inclusive as a result mainly of additional legislation. It is divided into six sections: (1) Certificates, notifications, reports, etc.; (2) unqualified assistants and covering; (3) sale of poisons; (4) association with unqualified persons; (5) advertising and canvassing; and (6) association with uncertified women practising as midwives. One object of the Council, therefore, is to prevent a practitioner from heedlessly committing an act which would involve him in a charge of infamous conduct in a professional respect. Section 2 of the Notice, relating to unqualified assistants and covering, is much less necessary now than when it was issued; this offence has receded into the background. The same may probably be said of Section 4—association with unqualified persons. On the other hand, one or two cases under Section 6—association with unqualified midwives—have been before the Council in quite recent years, and the scope of Section 1 in relation to certificates, notifications, etc., has been widened both owing to fresh legislation and to questions arising in connexion with the war.

Certificates required for a variety of purposes are valid only if signed by a qualified medical practitioner. Such certification is therefore a medical privilege, as well as a medical duty, and it is of the utmost importance that the duty be performed with every possible care. There may be now and then a natural tendency in granting a certificate to do something to oblige a friend or a patient, but the most scrupulous rectitude is essential. Fundamentally, the principles of ethics are of universal application to every profession and to every man, but the medical profession, on account of its special responsibilities, has to walk very warily, not merely to avoid infringing the rules of the General Medical Council, but to maintain the honour and repute of the profession in the public estimation. All this being so, the Council does well to recommend the instruction of students in medical ethics.

In its relation to "infamous conduct in a professional respect," the Council is perhaps at a disadvantage in having no machinery for making inquiries or investigations on its own account. The criminal authorities throughout the country are required to report to the Council every conviction of a practitioner for a felony or misdemeanour, and such cases, after consideration by the President and the Penal Cases Committee, are frequently brought before the Council. In the absence of a conviction evidence of alleged infamous conduct has to reach the Council by way of complaint by any individual or public department, etc., believing itself to be aggrieved, or by a body acting in the interests of the profession, such as the British Medical Association or one of the medical defence organizations.

The Council is also at a disadvantage, at least theoretically, in respect of the fact that it has only one kind of punishment which it can impose. That punishment is very drastic. It is the removal of the name of the practitioner from the *Medical Register*. Since the institution of the Council in 1858, however, this difficulty has been in a considerable measure overcome. Though the facts alleged against a practitioner may be held by the Council as proved, judgement may be suspended and the doctor in question required to present himself at a subsequent meeting of the Council, and to submit evidence by medical practitioners or other persons of standing that he has in the interval been acting in every way in consonance with proper standards of conduct. In such circumstances, after admonition by the President on behalf of the Council, no further action may be taken. Occasionally the period of probation may be prolonged beyond the six months which intervene between one meeting of the Council and another, or a practitioner may be required to come before it for a second time, and to bring further testimony on his behalf. Even where a name is removed from the *Medical Register* it may be restored, on application, after a sufficient interval and on consideration of what may have taken place since the removal of the name. By such expedients — and this statement of them is not exhaustive—the Council has had a measure of success in establishing something equivalent to a series of penalties corresponding to the greater or less gravity of the offence.

REVISION OF THE REGULATIONS AND RULES FOR DIPLOMAS IN PUBLIC HEALTH.

This is the very latest direction in which the reforming zeal of the Council is manifesting itself. On the last day of the recent session the following resolution was adopted by the Council at the suggestion of the Public Health Committee:

"That the General Council authorize the Public Health Committee to consider and revise the existing regulations and rules for diplomas in Public Health which were originally adopted by the Council on June 1st, 1889, and amended and amplified from time to time, particularly on December 1st, 1911, with a view to bringing the special course of instruction required of candidates for the diploma into harmony with the duties of a modern medical officer of health, which have changed considerably since the resolutions and rules were originally adopted and afterwards amended and amplified."

The Council, it should be pointed out, is in a much stronger position with regard to Public Health diplomas than with regard to qualifications in medicine. As concerns the latter, it has already been observed that the Council can only make "recommendations" to the licensing bodies, and that its ultimate control consists in advising the Privy Council to refuse registration to the licences of any persistently recalcitrant body. As to diplomas in Public Health, however, its power is absolute excepting that, of course, it lies with the licensing bodies to carry out the rules and regulations laid down by the Council. When the rules were originally adopted in 1889 the conception of public health was comparatively elementary. Excepting for infectious diseases and epidemiology in general, it related wholly to matters of environment, to water supply, food and milk supply, drainage, cleansing, ventilation, nuisance prevention and removal, and the like. Within recent years there has been extensive development, and such duties as school medical inspection and treatment, maternity and child welfare, and control of venereal

disease have come within the scope of the Public Health authorities. It is right, therefore, that the requirements for diplomas in Public Health should be correspondingly altered.

The discussion which took place on submission of the motion indicated that the Public Health Committee had in view not merely the question of adding new items to the required course of study, but the question whether at present too much time is not devoted to chemistry and bacteriology, seeing that in practice medical officers of health are not required to carry out this kind of work. They should always be able, however, to appraise the value of reports and certificates by analysts and bacteriologists.

Conclusion.

This completes the survey of the proceedings of the General Medical Council in regard to reform of medical education. It will be seen that the whole curriculum is under review, and that the questions include the raising of the age at matriculation from 16 to 17 years; stiffening of the preliminary examination in general education; a new preliminary examination in the introductory sciences; the subsequent teaching of these sciences in their application to the later stages of study; the inspiration of the entire curriculum with the principle of maintenance of health, and the preventive treatment of disease in its earliest and most trivial manifestations; revision of every section of the curriculum for excision of whatever is unnecessary, and for addition of whatever matters of moment may have hitherto been omitted; co-ordination of the whole educational scheme for avoidance of overlapping and for the due ordering and sequence of the subjects; modification of the examination system by introduction of the candidate's record of work throughout his years of study as an element in determining his admission to the practice of medicine; definite education of the student in the application of the principles of ethics to the sphere of medical practice, along with instruction in his duty to the State, and in the provision made by the State for supplementing the work of the practitioner in respect of health at every stage of life; and revision of the course of instruction and study required for diplomas in Public Health.

The scope of the movement in which the General Medical Council is now engaged could hardly have been wider. It is to be hoped that undue haste and undue delay in arriving at momentous decisions will alike be avoided. There is no doubt that the proceedings of the Council will be watched and its conclusions considered with appreciative interest by the general body of the medical profession

THE NEW INCOME TAX.

WHEN the Royal Commission on the Income Tax issued its very able report we called attention in some detail to the probable changes which it would bring about in the income tax system. As our readers are aware, some of those proposals have been translated into fact, and the payments of tax now being required all over the country are the first to be determined by the fiscal changes effected by the Finance Act of 1920. Income tax has for some years been at such a level as to make a very real inroad on the enjoyment of the income; it represents a surrender to the State of purchasing power only too urgently desired in these days for the legitimate satisfaction of present and future wants, and it is important that demands made by the local officials should not be satisfied until they have been subjected to intelligent examination. Fortunately, the new system is in many respects simpler than the old, and we very strongly advise all taxpayers to see that they understand what they pay before they pay it. This may, and not infrequently does, involve a little trouble, first, in studying the regulations, and second, in clearing up any obscure points or errors with the local officials, but it is time very well spent, and it will, as a rule, be found that the officials are willing to discuss such matters in an intelligent and helpful manner. We propose here to set out the elements of the new system as briefly and clearly as possible.

First of all, the change, radical as it is, does not in any way affect the calculation of the "income" which is to be taxed, professional profits remain assessable on the basis of the average of the three previous years' earnings, untaxed interest on the basis of the previous year, and so on. What the change does is to sweep away the old system of the two scales of rates—for earned and unearned incomes—rising at each £500 of total income, and substitute for it a new method of raising the effective rate as the total income increases, while at the same time the man with family dependants receives not insubstantial relief as compared with the taxpayer whose income is not required for the support of others beside himself.

1. *Earned Income.*

Income earned directly by the taxpayer is still dealt with less stringently than unearned, or, as it is now called, "investment" income, but to avoid the complication introduced by a different rate of tax that object is achieved by deducting 10 per cent.—that deduction, however, is not to exceed £200 for any individual—from the earned income, the balance of 90 per cent. being called the "assessable income." Where the income is mixed—that is, partly of each class, earned and unearned—the "assessable income" is, of course, the whole less 10 per cent. of the earned income—for example:

A. has £900 "earned" and £500 "investment income"—that is, his "assessable income" is £900 − £90 + £500 = £1,310.

A clear grasp of this conception of "assessable income" is essential to a proper understanding of the present system.

2. *Allowances.*

It is important to remember in this connexion that the income limit which formerly applied to this class of relief has entirely disappeared. If the ground for the claim exists, it holds good irrespective of whether the total income of the individual is £300 or £3,000. By way of warning, however, it may be pointed out that these allowances do not apply to super-tax, though they apply to the income tax payable by the same individual.

The allowances are deductible from the assessable income, and may be summarized as follows:

	£
Personal, unmarried	135
Personal, married	225
Personal, wife, as regards own earnings, additional	45
Child—for one, complying with the stated conditions	36
Child—for each other one, complying with the stated conditions	27
Relative taking care of widower's or widow's child	45
Relatives dependent by old age or infirmity, and not having an income exceeding £50 ...	25

The revenue authorities have forms containing the declarations required to be made when claims under the above heads are lodged, and we understand that such forms are supplied on application to the office of the local inspector of taxes.

3. *Assessable Income.*

When such allowances as are due have been deducted from the assessable income the balance is chargeable to the income tax, and it is provided that the first £225 of that balance shall be charged at 3s. in the £ and the remainder at 6s. It is the fixity of the portion—or "slice"—of the income chargeable at 3s. which produces the graduation of the tax. A moment's thought will serve to show that the greater the total income the greater *proportionately* the "slice" paying at the 6s. rate, and therefore the higher the effective rate—that is, the rate arrived at by comparing the total income with the actual amount of tax paid. In passing, it may be remarked that the stiffening of the super-tax accentuates the graduation as regards the higher incomes.

It may serve to make the matter clearer if the method is set out in the form of a calculation as follows:

Amount of total income	£	
Deduct one-tenth of earned income ...	£	
Assessable income	£	
Deduct allowances	£	
Income chargeable to tax ...	£	

Of this amount £225 is chargeable at 3s. and the remainder at 6s. in the £.

Life Assurance.—Under the old scheme the allowance for life assurance premiums was treated in the same way

as other allowances—at any rate so far as "old" policies, that is policies taken out on or before June 22nd, 1916, were concerned—they were deducted from the taxable income so that the payer benefited more or less according as he paid a higher or lower rate of tax. This principle has been preserved by providing that, so far as "old" policies are concerned, an allowance is to be given as follows:

Where the total income does not exceed £1,000, at 3s.
Where the total income does not exceed £2,000 at 4s. 6d.
Where the total income exceeds £2,000, at 6s.

As result of this, the duty calculated at 3s. and 6s. in the £ has to be reduced by the appropriate amount of the life assurance allowance calculated in terms of actual tax. "New" policies carry a relief at a uniform rate of 3s. in the £ as before.

One or two points remain to be noted. It is provided by Section 17 of the Finance Act, 1920, that the individual claiming the allowance must make a statement of his total income in the prescribed form. The stipulation is presumably intended to prevent an individual who has incomes in different areas being given any particular allowance twice over—a result which might happen when separate returns were being made to different officials. It is possibly this stipulation which has led to the withholding of the allowance in some of the cases which have been discussed in the daily press. Where the total income is under £2,000, it has for some years been the practice to render to the local authorities a statement of the total income, and where that has been omitted by accident or neglect the taxpayer's best course is to make good the omission and obtain a rectification of his assessment as soon as possible.

But where the total income exceeds £2,000 the position is different. In those cases the taxpayers are called upon to make returns to the London office of the Special Commissioners for the purpose of super-tax, and may very reasonably object to supplying similar statements to another official. We understand that in such cases the Special Commissioners have supplied forms of claim to individuals on their books, and, on receiving the declarations back, have notified the person in question as to whether the allowances are being made (1) through the inspector's office against tax payable locally, or (2) by the Special Commissioners themselves by way of set-off from the charge for super-tax. Where the former notification is received it would seem advisable to see that particulars of the revised assessment are supplied by the local inspector.

The advantage of the new system is that income received from investments is in the normal case taxed at 6s. in the £ by deduction, and usually properly so taxed. So long as the various "allowances" and the relief afforded by the £225 at 3s. provision are made against that portion of the income which is not taxed at its source, and therefore comes before the officials for assessment, then the amount of the investment income is immaterial, and the old trouble of determining on which side of a particular £500 limit line the total falls is avoided.

The new system has strong recommendations and obvious advantages, and there is good ground for hoping that it will materially assist the ordinary taxpayer to understand not only how much he has to pay, but also how the amount is properly determined. That consummation will be brought much nearer by a little trouble and thought on the part of both the taxpayer and the revenue authorities.

AMERICAN CONGRESS ON VENEREAL DISEASE.

AT the International Health Congress held at Cannes in April, 1919, the delegates representing the five principal allied nations called for regional conferences to take up the campaign against venereal diseases throughout the world. The first of such conferences was held last month in Washington, and among the 400 delegates were representatives from Great Britain, Canada, Argentina, Brazil, Chile, Ecuador, Cuba, Honduras, Mexico, Paraguay, Porto Rico, and Czecho-Slovakia. The second will be held next May in Copenhagen, and will be attended by delegates from all the Scandinavian nations and from Great Britain and Holland. Later conferences will probably be held in 1921 in Paris and in London, and it is expected that one or both of these will be attended by delegates from Germany.

The meeting in Washington is generally held to have been successful; there were no set papers, and few, if any, set speeches. The work was directed by a general committee selected from the delegates by Dr. W. H. Welch, the President, whose object was to gather together in this committee those who, by their studies, experience, and attainments, and by their relations to other official and non-official bodies, could speak with authority on various phases of the work. Its membership thus included clinicians, pathologists, sociologists, syphilologists, gynaecologists, social workers, and psychiatrists. The committee was divided into twelve subcommittees, each being set to consider a special group of problems formulated in a series of questions. In the afternoons the Committee sat as a whole and discussed seriatim the reports furnished by the twelve groups at the morning sessions. While the committee meetings were in progress the remaining 300 delegates assembled in the auditorium of the United States National Museum to hear papers and hold discussions. In the evenings the delegates met to receive the findings of the General Conference Committee, and many of these were keenly debated. The work of editing the resolutions reached by the Conference has not yet been completed, but the general way in which the questions were put forward and answered is shown by the following resolutions adopted in plenary session.

With respect to the use of the Wassermann reaction it was resolved that:

The blood Wassermann reaction should not be used as a sole guide to the duration of a syphilitic infection. The blood Wassermann reaction should not be used as the sole evidence of the effectiveness of a particular drug or method of treatment. The blood Wassermann reaction should not be used as the sole evidence of "cure" no matter how many times repeated.

A further resolution declared that:

The complement fixation test has not yet been shown to be of value in the diagnosis of doubtful cases of gonorrhoea. It is possible, however, that the precipitin test recently reported by Meader and Robinson may be of great value.

The Committee enumerated the advantages of working venereal disease clinics in conjunction with other clinics.

Exhibits and demonstrations were features of the work of the Conference; included in these were the methods of the United States hygienic laboratory in testing salvarsan, the application of the methods of social hygiene by the Washington police, and methods of treating venereal diseases at the United States Naval Hospital. Among the exhibits were wax models of the Army Medical Museum showing phases of venereal disease, and the social hygiene car for educational work now in use in North Carolina was brought to Washington for inspection by the delegates.

THE MEDICAL RESEARCH COUNCIL.

THE report of the Medical Research Council for the year 1919–20[1] is the first annual report of the Council, and includes the work of the Medical Research Committee (National Health Insurance) for the half-year ending March 31st, 1920, and of the Medical Research Council, which was incorporated by Royal Charter on April 1st, 1920, to continue the labours of that Committee, for the half-year ending September 30th, 1920. In spite of the changes in constitutional and administrative control there has been no breach in the continuity of the medical research work supported by parliamentary grant; but the new powers vested in the Council, which are such as have not before been assigned to any body of scientific men, give it fuller opportunities for securing that continuity of policy which is vital to the work of scientific research, and give it wide limits of intellectual and administrative freedom. While the Council is subject to the direction and control of a committee of Ministers responsible to Parliament, its powers are exercised in a position under the Privy Council in which not only is it brought into direct relation to the Ministry of Health for England and Wales, and the corresponding departments in Scotland and in Ireland, but also it can bring more effectively the medical research services throughout the kingdom into relation with the needs of other departments of State, and

[1] Report of the Medical Research Council for the Year 1919–1920. Cmd. 1088. London: His Majesty's Stationery Office. 1920. (9d. net.)

with similar systems of research work done in, or for, the various parts of the Empire. The provisions of the Charter make, in fact, a constitutional link of a valuable and novel kind between the scientific forces of the country and the State. As the committee of the Privy Council is under the obligation of consulting the President of the Royal Society before appointing any new member of the Medical Research Council there is a definite and formal link between the Society, as the great unofficial representative body of science, and the official State scientific organization.

Finance.

The increased financial grant of £125,000 made by Parliament for the work of the Council was announced too late in the year to have much effect on the expansion of the schemes already framed, but it has been allocated as follows:

	£
Costs of administration	7,800
National Institute for Medical Research, Hampstead	39,000
Equipment of Institute	18,000
Grants to investigators at universities and elsewhere	60,000

In addition, however, to the lateness in the year of the announcement of the increased grant, other factors are at present limiting the directions and scope of the work which the Council can subsidize. The fall in money value has rendered the increased financial provision more nominal than actual, and the costs of labour and of scientific apparatus have increased in larger ratio even than the decline in money value. In addition, the effect of the war on the universities has caused a dearth at present of men who otherwise could be at the stage of carrying out independent investigations; not only must the investigator be endowed with eagerness and some scientific ability, but he must possess also the requisite equipment in training.

From the report it is apparent that the Council is working in close relation with, and in the interests of, the other departments of State, particularly, as is natural, with the Ministry of Health. This is seen especially in the schemes of work upon tuberculosis and venereal diseases, and in physiology as applied to hygienic measures; less formally the Ministry suggests the need for any new inquiries, in the systems of research work under the Council, by which administrative medical measures may be guided. At the instance of the Home Office, again, the Industrial Fatigue Research Board has been appointed jointly by the Medical Research Council and the Department of Scientific and Industrial Research, in order to direct research on the subject of industrial fatigue on systematic lines, with a view to improving the health and efficiency of the workers; also at the instance of the Home Office new researches into miner's nystagmus have been instituted. For the Board of Trade the control of certain dangerous drugs, and the research work upon which it is based, are still continued. The research grants made by the Council in clinical medicine have been so adapted to the grants for teaching in medicine, formerly made by the Board of Education, as to secure the effective linking of research work with higher teaching. With this in view, the secretary of the Council, Sir Walter Fletcher, was appointed an assessor to the University Grants Committee.

Profitable Lines of Research.

The possible value of research from the purely financial point of view is demonstrated by the fact that after investigations on cardiology, pursued by Dr. Thomas Lewis under the auspices of the Council, for the Ministry of Pensions, approximately £46,000 annually has been saved on cardio-vascular pensions assessments in the London region alone. Recently the Development Commission, in consultation with the Council, has appointed a committee to advise upon the best methods of advancing the scientific study of the diseases of animals, and the hope is entertained that this may lead to the great resources of human pathology, in men, in methods, and in results, being utilized more fully for the study and prevention of animal disease, and in turn that human medicine may gain from the wider outlook and opportunities of comparative pathology.

Research work is being carried out in the direction of setting up official standards of value and authenticity for the numerous biological preparations, serums, and the like used in medical practice. In regard to such standardization too much dependence was previously placed by this country on the work of public or private laboratories in other countries, chiefly in Germany. The standard, for instance, of the antidiphtheritic serum used in all our fever hospitals, and formerly supplied from Frankfort, was entirely, during the war, dependent on the fact that the Government of the United States furnished such a standard, while the maintenance of the standard of antitetanic serum was likewise due to American enterprise and generosity. For such obvious purposes, as also for the more fundamental purposes of scientific research, biological standardization was urgently required, and both at the institute at Hampstead and the Standards Laboratory at Oxford important work is being done in this direction. The committee appointed by the Council to advise upon improvement and systematization of pathological methods is also continuing its work.

Special Investigations.

In regard to research on specific subjects the period covered in the present report has been one of reorganization. The investigations undertaken for reasons arising directly from the war have now practically come to an end, and in many instances this has been a signal for development along broader lines, and a more general application of the great advances in knowledge in special directions that were gained during the war.

To take one example: in tuberculosis, for instance, the changed conditions have enabled the Council to organize research along the manifold lines of attack offered by the general problem — on the morphology of the tubercle bacillus, on the pathology of infection, on problems of immunity against infection, on the classification of pulmonary tuberculosis, on the early diagnosis of tuberculosis, on the chemio-therapeutic treatment of tuberculosis, on electrical sterilization of milk, and on milk and tuberculosis infections, etc., investigations carried out by different workers in different parts of the country. Other subjects similarly organized for research include cerebro-spinal fever, influenza and pneumonia, rheumatic fever, venereal diseases, problems of child life, disorders of growth, accessory food factors (vitamines), disorders of the cardio-vascular system, the medical problems of flying, biochemistry and chemiotherapy, "status lymphaticus," and causes of unexplained death, and many others.

Occupation was resumed during the year of the building and grounds at Mount Vernon, Hampstead, and the several departments which during the war had been isolated in temporary quarters were brought together in accordance with the original design. The expected advantages of daily intercourse between bacteriologists and biochemists, physiologists and statisticians, and others, are being realized, and are giving opportunity for the exchange both of intellectual stimulus and of technical help; free intercourse takes place also between those engaged in schemes of investigation inside the institute and outside it, and several workers from outside laboratories and members of other Government services have been temporarily attached to the institute.

There are many problems in medical science which can best be studied, and some indeed which can only be fully studied, the Council believes, by men engaged in professional practice, who are in a position to follow the signs and results of disease and the effects of given treatment in suitable cases from their earliest to their latest phases. Studies, however, of this kind can only be successful if the professional man has some leisure and if he has access at need to laboratory and other resources, like those of a well-equipped hospital. Studies, again, made in hospital practice may be given the same kind of extended value as those possible to a man in private practice, if the cases can be received in their earliest stages and followed to the end by a proper system of after-history records. The Council expresses the opinion that until some effective revision takes place, both of the conditions of medical practice and of hospital organization, it must remain difficult or almost impossible to arrange for the combined and long-continued observations necessary for successful research work in this field. In this connexion the Council states that it is not only following with sympathy and interest, but has given some assistance to, the Research Institute established by Sir James Mackenzie at St. Andrews.

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PROBLEMS OF MEDICAL EDUCATION.

THE articles in our issues of this month (pp. 20, 52, 88) summarizing the deliberations of the General Medical Council on the burning subject of the reform of medical education, deal with questions of great importance to the future of medicine. They supplement, and indeed in some respects endorse, opinions previously expressed in Sir George Newman's memorandums, "Some Notes on Medical Education in England" (1918) and "An Outline of the Practice of Preventive Medicine" (1919), in the Edinburgh Pathological Club's "Enquiry into the Medical Curriculum" (1918), and by Sir James Mackenzie in various addresses, and particularly in "The Future of Medicine" (1919).

That the first and most important aim of medicine is the prevention of disease may perhaps be said by some to be a truism that is not only recognized but acted upon in many directions, such as infant welfare centres, the school medical service, industrial hygiene, and the social service inspired by the enthusiastic energy of Dr. R. C. Cabot, of Boston, Massachusetts; but the truth is that little more than a beginning, promising as it is, has yet been effected. The scope and meaning of "preventive medicine" perhaps require consideration, for to some minds this term still suggests mainly the activities of the medical officer of health and a specialized branch of medical practice which only incidentally concerns the rank and file of the profession. This mental attitude is probably due to the recollection of the leading part played among the nations by this country half a century or more ago in the organization of a public health system under the leadership of Chadwick, Simon, and others, and in part to the prevailing tone of instruction in medical schools, in which preventive medicine is chiefly associated with the lectures and courses in public health. Great as is our debt to sanitary science, especially for the disappearance of many of the more striking epidemic scourges, there is an enormous amount to be accomplished in the wider field of preventive medicine, and this can only be done when the whole profession, not content with realizing its share in this duty, takes an active part in carrying it out. For the proper solution of the problem a more thorough knowledge of the etiology of disease is essential, and though bacteriology and biochemistry are clearing some of the ground, the initial symptoms and stages, the environment, and the disposing factors have as yet been imperfectly explored. In this, as Sir James Mackenzie insists, the general practitioner must play the leading part. No doubt a great deal of the work of a general practitioner is concerned with preventive medicine, but he has to rely much on his own experience and is mainly self-taught; hence, to put him in the best position to carry out this duty, he must be bred up on these lines from his earliest student days; his whole education, from the preliminary sciences onwards, should be permeated with a conception of the prevention as well as with that of the recognition and cure of disease. The replies received by the General Medical Council from thirty medical schools showed that present-day teaching does not sufficiently meet these requirements. It appears to us that this may, to some extent, be explained as follows: As the outcome of specialization and extension of medical education, the teachers of the preliminary sciences are usually not now, as they formerly were, medical men, and the teachers of the intermediate subjects are no longer in such active touch with medical practice; their natural tendency, therefore, is to lay more stress on the principles of the science than on—what may, from their point of view, appear to be a narrower aspect—the practical bearings on the art of medicine. There is, and rightly, a revulsion against this condition of affairs, and efforts are being made to counteract the tendency to keep the medical curriculum in watertight compartments. In the United States of America this aim is being followed to an increasing degree; and although the preliminary subjects are taught before the curriculum begins, there are throughout the curriculum further courses whereby the earlier subjects are correlated with the clinical work; and in this country Professors Elliot Smith, Arthur Keith, and apparently Professor R. J. A. Berry in Australia (vide p. 75), have shown that anatomy—which unfortunately is an outstanding example of the academic method of teaching—can be made a living practical part of medicine.

After full discussion of the requirements for the teaching of the preventive aspects of medicine the Education Committee of the General Medical Council raised the question of the revision of the whole of the medical curriculum, and recommended important alterations in it, which should go some way towards producing the medical man equally able to ensure a healthy condition of the public as to cure disease when it does arise. While the minimum standard of general education required for registration is to be brought up to the level demanded in other learned professions, and the minimum age is to be raised from 16 to 17, the student should before registration have passed an examination in elementary physics and chemistry, and may receive sufficient instruction in biology to enable him to pass an examination in this subject immediately after his registration as a student. In this way the five years of the curriculum is for practical purposes prolonged, but the more complete correlation of these sciences with medicine is provided for by the recommendation of further specialized courses during the curriculum. Another important suggestion is directed at the examination bugbear which, though necessary for the sake of the weaker brethren, so often penalizes good men, and, it may be added, handicaps the teachers; this recommendation is to the effect that the record of the student's preparatory study may, at the discretion of the examiners, be taken into account in deciding the result of the examination. This is the thin end of the wedge, and it may reasonably be expected that experience will justify, as a further step in the same direction, the regular inclusion of marks, allotted on a report of the student's work, in the mark sheet of the examination.

In the third part of the article, published this week, some account is given of the views expressed by the General Medical Council and the authorities of the medical schools on the teaching of medical ethics, a matter in which the British Medical Association has taken particular interest. Many years ago an Ethical Branch was formed in Shropshire, and one result of its labours was the publication of an Ethical Code, edited by its honorary secretary, the late Dr. de Styrap. This code was very useful in its time in various ways; it was, for example, of great

assistance to this JOURNAL in its endeavour to help individual members who had become involved in disputes with colleagues or hesitated as to the course of conduct they should pursue in special circumstances. Later on, a former Chairman of the Council of the British Medical Association and member of the General Medical Council, the late Dr. Saundby of Birmingham, gave a great deal of attention to the subject, and eventually published a book, *Medical Ethics*, which was of very considerable service to the profession. Later the continuance of the publication of advice in the JOURNAL was rendered superfluous by the setting up of the Central Ethical Committee to deal with questions and difficulties of this kind. It is, of course, true that the principles of medical ethics are identical with those recognized by other professions, but they are applied to a special set of circumstances which, moreover, are of common occurrence in an almost identical setting. There are therefore certain general principles more or less peculiar to medicine which can be taught to medical students. The realization of these facts led the British Medical Association as long ago as 1905 to suggest to the authorities of the medical schools the desirability of arranging for a short course of lectures every year on medical ethics, drawing the attention of students to the principles on which it is founded. It had been proposed recently to repeat this suggestion, but in view of the action taken by the General Medical Council this is now considered superfluous.

LETHARGIC ENCEPHALITIS.

LETHARGIC ENCEPHALITIS, both in its clinical and pathological aspects, has recently been the subject of discussion in our columns on more than one occasion. We have endeavoured at various times to show that the increasing multiplicity of clinical types described does not make for any clearer appreciation of the problems presented by this disease. Special reference has been made in these columns to the recent work of French observers and to the discussions in the Académie de Médecine in Paris during which currency was given to the term "lethargic encephalitis." When M. Netter first dealt with the matter, just a year ago, he laid it down that the cardinal symptoms were fever, somnolence, and diplopia, followed by temporary paralysis of accommodation. The term "lethargic" seemed then appropriate, but recent experience has shown it to be misleading. Pathologically the disease seems to be an acute infiltrative encephalo-myelitis, due, if we may accept recent researches in New York and Paris, to a filtrable virus which can be cultivated by Noguchi's method.

Walshe,[1] in a recent paper in *Brain*, has presented a valuable study of the symptom-complexes of the disease, and in our view rightly deprecates a purely symptomatic classification, which is likely to reach quite unwieldy proportions. Following the teaching of Hughlings Jackson he would distinguish clearly between "positive" and "negative" symptoms, "positive symptoms being the expression of exalted function either from irritation or from loss of higher control, and negative symptoms expressing depression or loss of function from destruction of nervous tissue or otherwise." The symptoms, then, of lethargic encephalitis may be classified into two groups: (*a*) general, or signs of toxic infection, and (*b*) nervous, these being further divided into general and focal. The nervous symptoms may be either positive or negative. Thus, for example, lethargy or coma and paralyses are negative symptoms, involuntary movements positive. On this basis of classification the earlier cases described—and, indeed, the classical picture—may justly be recorded as essentially negative, for the principal symptoms were lethargy and ocular paralyses.

More recently, however, positive symptoms have figured with greater prominence in the symptomatology of the reported cases. Of this group of positive symptoms myoclonus has attracted much attention. Originally described by Sicard, this particular syndrome has lately been reported with increasing frequency, though, as Walshe states, many different types of involuntary movements have been included under the name of myoclonus. An interesting feature of this group has been the combination of severe neuralgic pains with the myoclonus. Seven new cases are reported by Walshe, each exemplifying a different clinical type of the disease. The description of these cases alone shows the futility of establishing a permanent classification of the disease on a purely symptomatic basis. We have nothing but praise for this exposition of the clinical aspects of lethargic encephalitis.

From reports lately published, both in the medical and lay press, it seems probable that we may expect a recrudescence of the disease. This article in *Brain*, therefore, comes at a peculiarly opportune moment. Wilfred Harris, to whose clinical acumen we owe one of the earliest reports on the appearance of this disease in recent times, has already written to warn our readers of the possibility of such a recurrence.[2]

We may add a word of warning on the numerous possibilities of diagnostic error which are offered by this protean disease. In every case the most scrupulous care should be taken to exclude the presence of other inflammatory or vascular diseases of the central nervous system, and the more so since as yet no specific treatment for lethargic encephalitis exists, while valuable remedial agents are to hand in such conditions as syphilis of the nervous system or cerebro-spinal fever. Knowledge as to the probability of eventual recovery is still very inadequate. There must be by now in the country sufficient clinical material on which a real inquiry into this very important point could be instituted. We would like to suggest this as a field of study to future observers. The occasional occurrence of relapses, again, is another important point on which more information is desired. Should this country be so unfortunate as to experience another epidemic of lethargic encephalitis it is to be hoped that a concerted effort will be made to collect all the available information—epidemiological, clinical, and pathological—so that definite conclusions may be reached.

[1] Walshe, *Brain*, vol. xliii, Part III, 1920.

[2] Wilfred Harris: BRITISH MEDICAL JOURNAL, 1921, i, 47.

ANNUAL MEETING AT NEWCASTLE: PATHOLOGICAL MUSEUM.

THE Committee appointed to organize the Pathological Museum in connexion with the Annual Meeting of the British Medical Association at Newcastle-on-Tyne in July, 1921, proposes to arrange the material under the following heads: (1) Exhibits bearing on discussions and papers to the various Sections. (2) Specimens and illustrations relating to any recent research work. (3) Instruments relating to clinical diagnosis and pathological investigation. (4) Individual specimens of special interest or a series illustrating some special subject. It is proposed to gather together a series of exhibits illustrating the pathology of individual cases. Such exhibits will include a brief clinical history of the case and mounted

specimens of the different organs and tissues illustrating the pathological changes and the correlation of the lesions. Other interesting specimens will be welcomed. The chairman of the Pathological Museum Committee is Professor Stuart McDonald and the Honorary Secretary is Dr. A. F. Bernard Shaw, Pathological Department, College of Medicine, Newcastle-upon-Tyne. The museum will occupy a central position in the same building as that in which the Sectional work is carried on, and will be easy of access. Every care will be taken of specimens, and the contents of the museum will be insured. It is hoped to make arrangements for exhibitors to demonstrate their specimens.

EXPERIMENTAL INFLUENZAL INFECTION.

In the course of an extended research into experimental pneumonia F. G. Blake and R. L. Cecil,[1] working in the bacteriological laboratories of the Army Medical School, Washington, have obtained results bearing directly on the pathogenicity of the influenza bacillus. Hitherto most of the animal experiments have consisted in subcutaneous, intraperitoneal, or intravenous injection of the influenza bacillus, and attempts to produce infection via the respiratory tract have usually failed. As there is no satisfactory method of distinguishing saprophytic from pathogenic varieties of the Gram-negative haemophilic bacilli to which the name *Bacillus influenzae* is at present indiscriminately applied, a strain isolated from an empyema was used for injection into the upper respiratory passages and intratracheally into the lung. But as preliminary intratracheal injection of a monkey failed to produce any evidence of infection, the virulence of the strain was raised by successive passage through white mice and monkeys; further, on account of the extraordinary rapidity with which the *Bacillus influenzae* may lose its virulence when subcultured outside the body, special efforts were made to inoculate the respiratory passages and lungs of monkeys with cultures obtained with as little delay as possible from the passage monkeys. Twelve monkeys received applications of these cultures on the mucous membranes of the nose and mouth, and manifested an acute infection, with profound prostration, absence of leucocytosis or leucopenia, essentially similar in clinical respects to human influenza; 5 monkeys developed acute suppurative inflammation of one or both antra, and 2 monkeys bronchopneumonia yielding a pure culture of the influenza bacillus. The application of the culture medium, from which the influenza bacilli grown in it had been separated by centrifugalization, to the oral and nasal mucosa of a monkey failed to produce any toxic effects. Ten monkeys received intratracheal injections of these cultures of enhanced virulence, and 7 developed bronchopneumonia, 2 tracheo-bronchitis, and 1 resisted infection. The bronchopneumonic lungs from 3 of the 7 monkeys gave pure cultures of *B. influenzae*, and in the other 4 cultures were sterile, showing that the infection had died out. From a minute study of the morbid changes it appears that experimental influenza and bronchopneumonia resemble influenza and influenzal bronchopneumonia in man. The morbid lesions —intense engorgement, haemorrhage, oedema, purulent bronchiolitis, scattered patches of peribronchiolar consolidation and the resulting emphysema and bronchiectasis—described by W. G. MacCallum and Wolbach in man, are paralleled by those found in the experimental monkeys; but the lesions are less severe than in the human cases, as indeed might be expected in view of the great severity of the epidemic and the probable exceptional virulence of the influenza bacillus at that time. There is a difference in the pathogenesis of influenzal lung lesions, whether spontaneous or experimental, on the one hand, and those due to the pneumococcus and the streptococcus on the other hand; the pneumococcus and *Streptococcus haemolyticus* cannot initiate an infection of the normal mucosa of the upper respiratory tract in monkeys, but they penetrate the bronchial mucous membrane at once and spread rapidly through the perivascular lymph spaces to the alveolar walls in all parts of the lobe of the lung. The influenza bacillus has not this invasive power, is rarely found in the lymphatics, blood, or interstitial tissues, and causes focal lesions by extending by continuity along the bronchial tubes. Well marked hyperplasia of the thymus was found in monkeys with *B. influenzae* infection, the gland being enlarged, firm, and with a peculiar pinkish-yellow flesh-like appearance. This condition, which has not been recognized in human influenza, appears to be merely part of a general hyperplasia of the lymphoid structures in the cervical and thoracic regions.

[1] F. G Blake and R. L. Cecil: *Journ. Exper. Med.*, Baltimore, 1920, xxxii, 691-744.

BLACKWATER FEVER.

Professor L. S. Dudgeon's study of 100 cases of blackwater fever in the Balkans during the years 1916–18[1] is rich in the observations of an experienced pathologist, and contains interesting criticisms of the hypotheses suggested for the solution of the vexed question of its pathogeny. Turning first to the aspects of clinical pathology: jaundice was present in 20 out of the 49 cases with full notes; some of the remaining cases had a yellowish discoloration of the conjunctiva, like that seen in pernicious anaemia, but examination of the blood plasma or serum did not show the presence of bile pigment. Emphasis is therefore laid on the importance of checking clinical impressions by laboratory tests, and a method consisting of evaporation of the blood to a dry sticky residue and then applying Gmelin's fuming nitric acid test for bile pigment is described. Numerous observations proved that the red blood corpuscles are not unduly fragile, and that the blood does not contain auto- or iso-haemolysins; on the other hand, an active haemolytic substance or substances can be extracted by alcohol or acetone from the tissues of fatal cases, and to a lesser extent from the urine, but cannot be obtained from the tissues in other conditions, including malaria. These extracts haemolyze human and animal red cells, but the urine from cases of blackwater fever does not haemolyze the red cells of man or sheep, and its injection into rabbits did not produce any bad effects. In connexion with these observations reference is appropriately made to Dr. Andrew Balfour's ingenious suggestion that blackwater fever may be due to the action of a haemolysin—introduced by a biting insect—on red blood corpuscles already enfeebled in some way, usually by malaria, but sometimes by tick fever. A malarial history was forthcoming in all the 100 cases, and it is shown that blackwater fever is at its height at the period of the year when the death rate from malaria is lowest. Film preparations of the blood during the paroxysm of blackwater fever were made in 40 of the 100 cases, and in 42 per cent. of these there were malarial parasites present, 60 per cent. of these being malignant rings or crescents. Spirochaetes were never detected in the blood or urine; and the experience with the Wassermann reaction and microscopic examination of the tissues after death did not lend any support to the view that syphilis, which is causally related to paroxysmal haemoglobinuria, plays any part in the etiology of blackwater fever. The well known hypothesis that quinine poisoning explains the disease was investigated in several ways, but neither consideration of the clinical history in the cases specially analysed from this point of view nor some animal experiments provided any evidence in its favour. Thus, rabbits rendered intensely anaemic by the intravenous injection of immune antiserums did not show haemoglobinaemia or haemoglobinuria when treated with various preparations of quinine intravenously or intramuscularly; and complete ligature of the ureters in rabbits while quinine was being given or had been given did not induce a condition in any way

[1] L. S. Dudgeon, *Journ. Hyg.*, Cambridge, 1920, xix, 208-244.

resembling blackwater fever. As long ago as 1909 Cleland suggested that blackwater fever was the evidence of anaphylaxis to the dead protein of the malarial parasite, and since then this idea has attracted some attention; but from a comparison of the morbid changes in blackwater fever with those in two fatal cases of anaphylaxis, Professor Dudgeon concludes that the only phenomenon common to both is the haemorrhagic state, which, of course, may be due to various causes.

INFECTIOUS MONONUCLEOSIS.

WRITING from the division of clinical pathology of the medical clinic in the Johns Hopkins University and Hospital, T. P. Sprunt and F. A. Evans[1] describe, under the somewhat laboratory title of mononuclear leucocytosis in relation to acute infections ("infectious mononucleosis"), a fairly clear-cut clinical group of cases, whether or not they may eventually prove to be all due to the same cause. These cases are of interest inasmuch as they may be regarded as acute leukaemia or lymphadenoma, and, though the authors do not refer to this point, have very probably been described under the name of glandular fever. Six cases, all in young adults, are reported; all had enlarged and tender cervical glands and five of the six had in addition a similar condition in the axillae and groins; the spleen was palpably enlarged in four. The average duration of fever was between two and three weeks, and was accompanied by moderately severe prostration. One patient had albumin and casts in the urine. In four of the cases there was tonsillitis or pharyngitis. The total leucocyte count was normal at first, but later there was a leucocytosis of 13,000 to 20,000 per cubic millimetre; the differential count showed a slight increase in the cells of the large mononuclear transitional group and the presence of many pathological lymphoid forms; later again there was a leucocytosis largely due to lymphoid cells, many of which were pathological. In three cases kept under observation these blood changes were found to persist for some weeks after the signs and symptoms had disappeared and then to pass away. The red blood cells, haemoglobin determinations, and the platelets, did not show any alteration other than that of a mild secondary anaemia incident to an acute infection. The prognosis, as shown by these six cases, which all recovered, appears to be good, but it is interesting to note that "eminent haematologists have considered the possibility of a leukaemia of transient nature from which the patient recovers spontaneously." Sections of excised glands were not normal, the lymphocytes being increased in numbers, but no positive diagnosis was justified. Attempts to determine the infective agent were unsuccessful; the Wassermann reaction and blood cultures were negative, and animal inoculation of a gland in one case did not give any information. In 1913 R. C. Cabot drew attention to the occurrence in rare instances of a lymphocytosis in wound sepsis, boils, and streptococcic adenitis of tonsillar origin, which can be distinguished from lymphoid leukaemia by the recognition of an infective origin for the adenitis, the lesser degree of the infective lymphocytosis, and the course of the disease. Professor Arthur Hall in the same year recorded such "a case resembling acute lymphatic leukaemia ending in complete recovery," and similar examples have been reported by Lüdka, Marchand, Sanders, and by Türk, who considered these cases as a key to the etiology of acute leukaemia.

PROFESSOR EDWARD HILL OF DUBLIN.

AMONG the attractions of the study of medical history it is not impossible that there may lurk a gratifying feeling of self-congratulation on our superior or more fortunate conditions as compared with those of our professional forebears. Thus, in tracing the development of a school of medicine, or in recording the evolution of medical science, we can from our secure pinnacle graciously award praise to those who struggled with difficulties that no longer block our way. A century ago medical controversies were conducted with the same violence of language and imputation of motives as those in which politicians and writers habitually indulged. How far the change in manners is superficial and a phase of fashion and how much may be ascribed to a real change in human nature will be variously estimated by each one of us according to his experience and temperament. That medical polemics flourished in Dublin as well as elsewhere is shown by the interesting sketch of Dr. Edward Hill (1741–1830) drawn by the scholarly Registrar of the Royal College of Physicians of Ireland, Dr. T. Percy C. Kirkpatrick, and presented by him to the College on St. Luke's Day, 1920. Dr. Edward Hill was for forty-nine years Regius Professor in the University of Dublin, and held every office, including that of president on five different occasions, and finally, when in his seventy-ninth year, became Dun's librarian in the Royal College of Physicians of Ireland. He was an accomplished scholar, well acquainted with the Latin, Greek, French, and Italian classics, and possessed of considerable skill in architecture; but he did not leave any medical writings, and does not appear to have been very fond of hospital practice, which he described as "a dangerous and arduous duty." What he regarded as his life's work was a word-index of *Paradise Lost*—containing references to every occurrence of even the words "the," "and," "as"—which never saw the light of day, and may well be remembered as a monument of misdirected energy. His views about the duties of a teacher were formal to a degree: provided that a student knew his Hippocrates, his Galen, and his Celsus, what need had he to study sick people? It is not surprising that the Regius Professor was firmly opposed to the new-fangled idea, put forward about 1811 by James Maccartney, Professor of Anatomy, that examinations held under the *Liceat ad examinandum* should be conducted in English instead of in Latin. But the most striking feature of Hill's long professional and professorial life is the weary and acrimonious disputes in which he was constantly engaged, mainly with Perceval. This rather unscrupulous rival had studied in Edinburgh and on the Continent, and was deeply impressed with the importance of clinical instruction; but his chief object appears to have been selfish, for he desired to be in a position to pose as the founder of a great hospital in Dublin. In this he partially succeeded, for the west wing of the present Sir Patrick Dun's Hospital in Great Canal Street was opened in 1807, but Perceval's name is scarcely remembered in the institution for the foundation of which he sacrificed so much honour. Hill, who wrote "in a baneful hour the utility of clinical lectures was suggested," failed in his opposition, but his honour remained untarnished. The truth is that both the antagonists, while professing to work for the good of the school, also strove for their personal aims.

MEMORIAL TO THE LATE DR. A. J. CHALMERS.

THE late Dr. A. J. Chalmers—the well-known authority on tropical diseases, and joint author with Dr. Castellani of *Tropical Medicine*—whose sudden death on his way home on leave in April last shocked the profession and his numerous friends, left a splendid collection of medical books mainly on tropical diseases, and including some almost priceless incunabula. The whole of these, with the exception of about sixty volumes, presented to the Royal College of Physicians of London, have been presented by Mrs. Chalmers to the Royal Society of Medicine, which has decided that the collection shall be kept together and be known as the "Chalmers Collection." Mrs. Chalmers, we are informed, has presented the society with the sum of £500 for the shelving and furnishing of a room in which the books will be kept as a memorial of her husband. It is hoped that the collection of books on tropical medicine

[1] T. P. Sprunt and F. A. Evans, *Bull. Johns Hopkins Hosp.*, Baltimore, 1920, xxxi, 410-417.

will be added to from time to time, and the room chosen for the Chalmers Library is well adapted for the purpose. This coincides with the reconstruction of the new Section of Tropical Medicine and Parasitology. The Section was formed in 1912, but was suspended during the war, and has only this session been formally constituted, and among the first nominated officers are Lieut.-Colonel Sir Leonard Rogers, I.M.S., as president, and as vice-presidents, Professor Leonard S. Dudgeon, Lieut.-General Sir John Goodwin, D.G., A.M.S., Vice Admiral Sir Robert Hill, D.G.M.S., R.N., and Professor G. H. F. Nuttall. The new Section is fortunate in being able to start with a library of its own—perhaps the finest collection of books on tropical medicine to be found anywhere.

THE ROYAL CHEST HOSPITAL.

A SPECIAL meeting of the governors of the Royal Chest Hospital, presided over by the Lord Mayor of London, will be held at the Mansion House on Monday next, at 3 p.m., to consider and, if thought fit, to approve the scheme for the amalgamation of the Royal Chest Hospital, City Road, with the Great Northern Central Hospital. The suggested scheme is for the provision by the Great Northern Central Hospital of a number of beds allocated to diseases of the heart and lungs at least equal to those given up by the Royal Chest Hospital; the present buildings in City Road are to remain as the Royal Chest Section of the Great Northern Central Hospital until such time as building becomes practicable, when a block in the reconstructed Great Northern Hospital is to be named "The Royal Chest Hospital Block," and the out-patient department of the Royal Chest Hospital will continue in the City Road as an outpost of the chest section of the Great Northern Central Hospital; proper provision is to be made for both lay staff and medical staff of the Royal Chest Hospital. The Minister of Health was invited to express his opinion on the arrangements for amalgamation, and had no modification to suggest, agreeing that it would be wiser to amalgamate now, while the Royal Chest Hospital was free of debt, since its council had come to the conclusion that it could no longer undertake the responsibility of raising funds.

THE ALEXANDER AND PARKES MEMORIAL PRIZES.

THE Alexander Memorial Prize, consisting of £50 with a gold medal, is awarded every third year to the writer of the best essay on a subject dealing with military surgery, military medicine, or military hygiene. The competition is open to executive officers of the R.A.M.C. on full pay, with the exception of professors and assistant professors of the Royal Army Medical College. The subject for the next prize is "Trench foot: its pathology and treatment (medical and surgical), with the administrative measures for the reduction of its incidence." Essays must bear evidence of the personal observations and experience of the writers; they should be sent to the Secretary, Alexander Memorial Prize, at the Royal Army Medical College, Millbank, S.W.1, by December 31st, 1921; each essay must have a motto, and be accompanied with a sealed envelope bearing the same motto, and containing the name of the competitor. The Parkes Memorial Prize, consisting of seventy-five guineas in money, with a gold medal of the value of fifteen guineas, is awarded every third year to the writer of the best essay on a subject connected with hygiene. The competition is open to the medical officers of the Army, Navy, and Indian Services, of executive rank on full pay, with the exception of the professors and assistant professors of the Royal Naval Medical College, Greenwich, and of the Army Medical School during their term of office. The subject for the next prize is "The means of spread and method of control of bacillary dysentery in the field" (to be illustrated, so far as practicable, from the personal experience of the writer). Essays should be sent to the Secretary, Parkes Memorial Fund, Royal Army Medical College, Millbank, by December 31st, 1921. The rule as to the use of mottoes applies to this prize also.

REGULATIONS UNDER THE DANGEROUS DRUGS ACT.

THE Home Secretary, under the Dangerous Drugs Act, 1920, has drafted regulations for controlling and restricting the possession, sale, and distribution of raw opium; and a further set of regulations for controlling the manufacture, sale, possession, and distribution of morphine, cocaine, ecgonine, and diamorphine (commonly known as heroin) and their respective salts, and medicinal opium, and preparations and substances containing not less than one-fifth per cent. of morphine or one-tenth per cent. of cocaine, ecgonine, or diamorphine. Generally speaking these drugs may be supplied only to persons specially authorized, except when lawfully dispensed from a prescription given by a qualified medical practitioner in accordance with specified conditions. Persons, including medical practitioners, who dispense such prescriptions, must keep separate books for records of all dealings in the four groups of drugs: (*a*) cocaine and ecgonine and substances containing them; (*b*) morphine and substances containing it; (*c*) diamorphine and substances containing it; (*d*) medicinal opium. Medical practitioners and registered dentists and veterinary surgeons, together with dispensers at public hospitals or institutions registered under the Pharmacy Act, 1868, may possess and supply these drugs, so far as is necessary for the practice of their profession or employment. We propose to refer to the draft regulations in more detail at a later date. They appear to be in line with the war-time restrictions, introduced under the Defence of the Realm Act, which were described in our issue of November 17th, 1917, at p. 657.

HOSPITAL INQUIRY COMMITTEE.

BEFORE the rejection of the Ministry of Health (Miscellaneous Provisions) Bill in the House of Lords on December 14th, 1920, it was urged upon the Minister of Health by members of both Houses that every effort ought to be made to sustain the voluntary hospital system. With this object in view Dr. Addison agreed to appoint a small independent committee to consider the financial position of voluntary hospitals throughout the country and to make recommendations thereon at an early date. No official announcement has yet been made regarding the membership of this Committee, but a statement has appeared this week, and it is understood to be well founded, that the chairman will be Viscount Cave, who was Home Secretary from 1916 to 1919. The intention is that the Committee shall consist of five, and it is probable that the members will include Sir Clarendon Hyde, who is associated with Lord Cowdray as a director in a number of his undertakings.

IN the *London Gazette* of January 11th it was announced that the King has signified his intention of conferring the honour of knighthood upon Dr. Maurice Craig, C.B.E., and Dr. P. Horton-Smith Hartley, C.V.O. Sir Maurice Craig is physician for psychological medicine and lecturer in the same subject at Guy's Hospital, and consulting neurologist to the Ministry of Pensions. Sir Percival Horton-Smith Hartley is physician and joint lecturer in medicine at St. Bartholomew's Hospital, and senior physician to the Brompton Hospital for Consumption.

IN England sanatorium benefit will cease on May 1st to be included among the benefits conferred on insured persons by Part I of the National Insurance Act, 1911; in Scotland this termination has already taken place, and as from January 1st, 1921, the Public Health Local Authorities have been required to make arrangements for the treatment of tuberculosis in insured persons.

India.

CALCUTTA SCHOOL OF TROPICAL MEDICINE.

IT is rather more than ten years since Sir Leonard Rogers proposed that a fully staffed and properly equipped school of tropical medicine should be founded in Calcutta. The proposal was approved by the Government of India, and an endowment fund was opened in 1914. It received liberal support from Indian noblemen, from the tea, jute, and mining associations, from the Tata oil and iron companies, and from Sir David Yule, who endowed a European chair of research in biochemistry; when Sir Leonard Rogers left India early this year he had the satisfaction of knowing that the whole scheme was on the way to completion. An appeal has recently been issued for further contributions to complete the endowment and equipment. The Calcutta School of Tropical Medicine and Hygiene consists of the school proper with its laboratories, an institute of hygiene with its laboratories, under the same roof as the college, and the Carmichael Hospital for Tropical Diseases with 116 beds. It is not intended that the classes at the school should exceed about forty, and the lecture theatre has been designed to accommodate fifty. The school building has four stories, and the laboratories have been designed under the supervision of Sir Leonard Rogers for the special purposes they are intended to serve. On the second floor is a temperate laboratory built with double windows and insulated walls, so that its temperature will be constantly below 70° F.; this will allow protozoological research work requiring low temperatures to be carried out at all times of the year. The fourth floor contains a series of eight laboratories for research work, an animal room, a dark room, and microphotographic apparatus.

The purpose of establishing the hygiene section is to combine in one building laboratories under the control of the Sanitary Commissioner of Bengal, to co-ordinate the public health laboratory work of the province, and to raise the standard of education and efficiency of Deputy Sanitary Commissioners by providing facilities for post-graduate teaching and research. Classes for the degree of bachelor of hygiene and the diploma of public health of Calcutta University will be held annually from October to June.

The Carmichael Hospital is to be conducted as part of the tropical school. The hospital, which is close to the school, will be administered by the director of the school, who will allot beds as required to the members of the staff. The number of beds is 116 (43 European and 73 Indian), and the staff, which consists of eight professors and seven research workers, is large enough to ensure the intensive study of selected cases and personal teaching. There is a clinical laboratory.

The appeal now made is for contributions towards the upkeep of this hospital, to increase the endowment for a whole-time chair in research work, to endow an Indian research scholarship, and for improved equipment. Contributions are also asked to enable the chair of entomology and helminthology to be divided; it is regarded as very desirable to have a chair of helminthology in a country such as India, where helminthic infestations are very common. The director of the school is also professor of tropical medicine. The other chairs are tropical pathology and bacteriology, pharmacology, serology and immunology, tropical hygiene, biochemistry, and protozoology. The school has also a research chemist and teacher of chemistry and physics, and the hospital a resident medical officer. The members of the professorial research staff will devote their whole time to teaching and research, and will be debarred from private or consultant practice, receiving a local allowance in lieu. In order to maintain the standard necessary for post-graduate teaching it is proposed that all professorial and assistant professorial appointments shall be made by the Government of India, so that there may be the freest possible scope for the selection of the best men available in India.

MEDICAL COLLEGES IN BENGAL.

The Governor of Bengal, Lord Ronaldshay, who presided at the annual prize distribution at the Calcutta Medical College on December 1st, 1920, said that the rapidly increasing demand for medical education in Bengal was a most striking fact. This year the number of applicants for admission to the Calcutta Medical College was 947, largely exceeding the number of vacancies, which was 153. The Government was anxious to increase facilities throughout the Presidency. To add to the efficiency of the Calcutta College heavy expenditure had been incurred, including the acquisition of plots of land at a cost of 21½ lakhs; the expenditure on servants' quarters was over 5 lakhs. It was intended to make provision also for students' hostels. Since Lord Ronaldshay spoke it has been officially announced that to meet the demand for a greater number of qualified medical practitioners the sanctioned strength of students at the Calcutta Medical School has been raised to 500 and at the Dacca School to 400. A medical school, with accommodation for 200 students, will be opened at Burdwan, and the question of establishing medical schools in other centres is under consideration, as are also schemes for the establishment of hospitals for incurables and convalescents in Calcutta, and for a leper colony.

England and Wales.

WORK OF THE CENTRAL MIDWIVES BOARD.

IN the annual report on the work of the Central Midwives Board the number of midwives on the roll is given as 45,960, a net increase for the year of 1,794. Of these, the number (so far as can be ascertained) who actually practise as midwives is relatively small, being only 11,488, of whom 7,865, or 68.5 per cent., are trained, and 3,623, or 31.5 per cent., untrained. The number of candidates entering for the Board's examinations during the year was 2,391, as against 1,997 in the previous year, and of those who completed the examination 1,904 passed, the percentage of failure being 18.8. Of the 54 penal cases dealt with by the Board, 22 were those of women who had neglected to advise medical assistance in cases of ophthalmia neonatorum, this large percentage being due, no doubt, to more vigilant action on the part of some of the local supervising authorities. At a conference of the Board with the Ministry of Health and the Board of Education it was agreed:

1. That as far as the training of pupil midwives was concerned a maternity home could not safely be combined with an infectious diseases hospital unless the wards of each were entirely separate, and the staff, both medical and nursing, were unable to meet.
2. (*a*) That where a maternity home was combined with a general or Poor Law hospital, an isolation block or ward should be set apart, and one or more nurses told off to attend the cases as they arose, and that the nurses should attend such cases only. (*b*) That while working in the maternity wards no pupil should be employed in any other work.
3. That a maternity home should not be recognized for the purpose of training pupils until it was able to show (*a*) that it had an adequate staff and arrangements for training, and (*b*) that it had a suitable number of cases to train upon.

MATERNITY HOMES AND CHILDREN'S INSTITUTIONS.

A memorandum has been issued by the Ministry of Health asking for information to be furnished annually by the authorities of maternity homes and hospitals for each year ending December 31st. This information should include: the total number of cases admitted; average duration of stay; number of cases (*a*) delivered by midwives, (*b*) by doctors, (*c*) in which medical assistance was sought by midwives, with reasons; number of cases notified as puerperal sepsis, and the treatment thereof; number of cases in which temperature rose above 100.4° for twenty-four hours, and pulse rate in such cases; number of cases notified as ophthalmia neonatorum, with result of treatment; number of cases of "inflammation of the eyes, however slight"; number of infants not entirely breast-fed while in the institution, with reasons; number of maternal deaths, with causes; number of foetal deaths (stillborn or within ten days of birth), with causes thereof, and results of *post-mortem* examination if obtainable. Immediate information should be sent to the Ministry of every case of maternal mortality occurring in the institution or due to illness contracted there, and of every notified case of puerperal fever.

The Ministry of Health has issued also a memorandum asking for annual information, to be supplied for the year ending December 31st, by the authorities of institutions

receiving resident children under 5 years of age. The desired information includes number of cases admitted, average duration of stay, reasons for admission, number and condition of health of cases discharged, number of cases of infectious disease, number of deaths with causes thereof, and number of children discharged on account of illness. It is further desired that immediate information should be sent to the Ministry of all deaths from gastro-enteritis or epidemic diarrhoea, with a brief statement of the circumstances.

Ireland.

ROBERT CAMPBELL MEMORIAL.

THE following additional subscriptions have been received towards the memorial to commemorate the pioneer work done for surgery by the late Mr. Robert Campbell of Belfast. It is proposed to establish a prize for distinguished work in any branch of medical science done by a member of the medical profession in Ulster or a graduate of Queen's University, Belfast.

	£	s.	d.
Amount already acknowledged in the JOURNAL	715	14	0
S. J. W. Donald (Sutton-in-Ashfield)	2	2	0
J. E. MacIlwaine	10	10	0
W. T. Maguire (Dublin)	2	2	0
T. Walker (Wakefield) ...	1	1	0
Miss J. Dickie	5	5	0
Rowland Hill	2	2	0
T. M. Tale (Downpatrick)	2	2	0
John Thompson	5	5	0
Stafford Geddis	2	2	0
Adam Moss (West Kirby)	5	5	0
John R. Davison	2	2	0
S. Wilson McComb ...	5	5	0
W. MacDermott	1	1	0
Dr. and Mrs. John Campbell	52	10	0
H. T. Hardy Green ...	1	1	0
Adam Fulton (Southport)	5	0	0
W. Calwell	10	10	0
Sir William Whitla ...	10	0	0
T. S. Kirk	10	10	0
W. M. Killen (second instalment)	5	5	0
H. P. Malcolm	3	3	0
Total ...	£859	17	0

Correspondence.

THE VOLUNTARY PRINCIPLE AND THE BRADFORD BOGEY.

SIR,—Amidst all the turmoil and discussion about the future of the hospitals Bradford is always being brought forward, first of all as an example of the failure of the voluntary principle, and secondly, as an example of what will be done for the salvation of the sick poor when once our hospital requirements are put into the hands of our municipal authorities.

May I, once and for all, put it on record that nearly everything which has been said about Bradford up to the present time is "more or less untrue"? Certainly nothing is more untrue than the statement that no poor patient can obtain admission to the Royal Infirmary unless he pays a fee to a member of the honorary staff. Such a statement has been made, and has found its way to the Ministry of Health, and has apparently been accepted in good faith. What an acknowledgement for four years' strenuous and gratuitous war service on the part of the honorary staff!

From your report of the recent conference on hospital finance it appears that Dr. Peter Macdonald of York repeated the Bradford story which has been current for a long time past—a story which is just so much propaganda to promote a general socialistic hospital policy throughout the kingdom. Lest his remarks should be accepted as those of an authority because they have not been challenged, will you allow me to analyse them?

Dr. Macdonald stated in the first place that we have 361 beds for a population "which cannot be less than half a million." The last record of the Bradford population was something nearly approaching three hundred thousand. Without criticizing his estimate of the available hospital accommodation in the city, may I point out that within a circle of twenty miles radius there are something like a score of hospitals which unite in providing hospital treatment for this part of the West Riding?

As regards Bradford itself, Dr. Macdonald states that "the conditions are so intolerable" that a municipal hospital has been established. That statement is incorrect. What has happened is that the guardians have recently handed over the management of the Poor Law hospital to the Health Committee of the Bradford Corporation, and the Poor Law hospital has thereby become a municipal hospital. In spite of the change of name it remains the same old obsolete group of buildings which the Local Government Board condemned as unfit for hospital purposes twenty years ago. Moreover, it has been admitted at a town council meeting that after allowing for all the accommodation earmarked for what may be called public health purposes there is nothing left for general surgery and medicine. Nevertheless, the socialistic and Labour party, prior to the recent municipal elections, made haste to announce that they had now acquired a hospital second to none in the country and equipped with every modern convenience for dealing with all surgical and medical cases. The voluntary institutions were "back numbers" and would be scrapped, and everything would be on the rates before long.

Now, Sir, I have spent twenty years in Bradford, and during that period I have treated at least ten thousand working-class patients in the Royal Infirmary. I know that I am regarded as a "tiresome person" who is difficult to satisfy. The Royal Infirmary is an old obsolete building nearly as bad as the municipal hospital, and it is no fault of mine that we have not already acquired a new building. Nevertheless, we treat three thousand patients a year, and our results compare most favourably with any of the neighbouring cities, not excepting our great neighbour Leeds. There has been a great outcry about waiting lists, and we have been treated to a pathetic picture of the sick poor, hoping against hope for a long-delayed relief. During the war there was great hardship. Which of us had not to endure it? To-day *there is no waiting list* at the Royal Infirmary beyond a few patients who have fixed a certain date for admission to suit their own convenience.

Dr. Macdonald, whom I remember in Bradford some twenty years ago, has been talking "through his hat." He suggests that the Royal Infirmary is bankrupt to the tune of £1,000 a month. As a medical man he has forgotten or never learnt the axiom of one of our greatest surgical teachers, "Never believe anything you hear and only half of what you see"! In 1914 the income and expenditure of the Royal Infirmary balanced. Since that date, during a period of seven years, we have incurred a debit of £22,000. In 1914 our annual subscriptions, apart from investments and donations, amounted to £6,000. The workpeople's fund realized £3,400 in addition. The annual subscription list for 1920 is not far short of £17,000. The workpeople's fund is something over £9,000. We have received a cheque for £10,000 from the National Relief Fund against our overdraft. We have paid for a site for a new infirmary worth £20,000 and have £35,000 in hand besides promises for another £20,000. In addition we have just received £23,000 for a new infirmary from the old war hospital account! Moreover we have wiped out the socialistic party on the town council!

I trust that before the conference meets again, Dr. Peter Macdonald will have pondered over these facts, and taken them to heart. I trust that I shall not be considered as an extreme enthusiast for the voluntary principle. I should welcome a change of the old system, but I will fight to the last a policy which involves the murder of the voluntary hospital, and puts everything on the rates. We want co operation. A first-class general infirmary and a municipal hospital to work with it is the ideal. The latter should be staffed by the younger men who are aspiring to establish themselves as the consultants of the city; as soon as they acquire an honorary appointment on the voluntary hospital they should relinquish the salaried appointments at the municipal hospital and "take silk." Such an arrangement would be a blessing to everyone concerned.—I am, etc.,

Bradford, Jan. 5th. J. BASIL HALL.

VOLUNTARY HOSPITAL STAFFS.

SIR,—"Why does the medical profession desire to do the staffing of hospitals without remuneration?" Such is the question put by Dr. Rees to the medical profession in your last issue. As I have been interested in the subject for many years, may I offer a partial answer, though I am unable to answer it completely?

In 1839, when the question of provision of hospital accommodation for the working people was considered by the Poor Law Commissioners, the members of the staffs of the metropolitan medical schools attached to charity

hospitals came to the conclusion that, were the State to establish hospitals in addition to the "charity" hospitals then in existence, they, as teachers, would be deprived of clinical cases necessary for the instruction of their pupils—the pupils being indirectly their source of future income. To-day the reason is ostensibly perhaps no longer quite the same, but the staffs of charity hospitals—in name—will in all probability join together with an object identical with that of the doctors who opposed the Poor Law reform in Victorian years, but the purpose now, as then, is essentially to prevent change, and to retain existing privileges.

Many members of the staffs of hospitals, with and without medical schools attached, now receive payments for the services they render, and they do this under the cloak of the title of honorary officer. I would ask, as a corollary to Dr. Rees's question, Is this a course that can be justified?—I am, etc.,

Cambridge, Jan. 10th. JOSEPH GRIFFITHS, Colonel.

LINES OF ADVANCE IN THE SURGERY OF BREAST CANCER.

SIR,—There are one or two points in Mr. Handley's most interesting paper on lines of advance in the surgery of breast cancer which I think call for consideration.

The mode of advance of the disease has been fully described in previous communications by Mr. Handley, but in the present one he emphasizes the supraclavicular and intercostal routes.

The tables of recurrence furnished indicate the prevalence of the supraclavicular route, and this confirms my own observations, which led to careful examination in the supraclavicular area for evidence of enlarged glands, with, in many cases, negative results.

As recurrence followed in this area, and in some instances many years after the excision of the mamma, it was felt that had the supraclavicular glands been removed a greater approach to a cure would have been effected. With a view to determining the condition of the supraclavicular glands which yielded no clinical manifestations of involvement, I decided to select six cases of breast cancer in which the growth was slow, the skin involvement slight, and the axillary glands palpable. A further examination of the supraclavicular area was made while the patient was under an anaesthetic, but no enlargement of glands was made out. After the removal of the breast and the axillary glands the dissection was continued into the neck, and in order to obtain free access to the glands at the inner angle the clavicular portion of the sterno-mastoid muscle was divided. All the loose tissue and glands were carefully removed, and for the purpose of microscope examination the tissue on the outer half of the space was kept separate from that on the inner side. On the completion of the operation most of the structures in this space, including the scalenus anticus and the phrenic nerve, were exposed.

In all six cases the parts removed from this area were examined by myself and the pathologist, and we failed to determine in three cases by the naked eye whether the glands were involved. A microscopic examination, however, showed that in five cases the glands were the seat of carcinomatous invasion; in only one case were the glands free.

It seems to me that no operation on the breast can be regarded as complete until the state of the supraclavicular glands is determined. The proximity of these glands to the first and second intercostal spaces would to my mind suggest that the intercostal recurrence was an extension from them. In any case no one will doubt the force of the statement, "Cancer cells which have reached the supraclavicular glands have obtained a favourable strategic position for the extension of their attack in various directions."

Apparently Mr. Handley does not favour the extension of the primary operation to the supraclavicular area, and yet in an earlier part of his paper he states that "there can be no doubt that the right treatment of supraclavicular recurrence in its early stages is operative." He would wait until the glands were palpable, yet this delay might determine the involvement of the gland capsule and the infiltration of the surrounding tissue. In one of my cases referred to this had definitely taken place. The suggested alternative to operation, of the introduction of radium into the supraclavicular area, would be difficult of attainment in the west of Scotland owing to the limited supply available. So far the extended operation has not proved a serious strain on the patient, and in the six cases I describe there has been no recurrence; it is, however, too soon to make any definite pronouncement on this point. Personally, I strongly favour removal of the glands in the supraclavicular area, even in cases where they are not clinically detectable.—I am, etc.,

Glasgow, Jan. 10th. R. H. PARRY.

GASTRIC ULCER AND GASTRIC CANCER.

SIR,—Mr. Thurstan Holland's interesting paper in your issue of January 1st contains the following very important statement:

> "The experiences of a large *x*-ray department are strongly opposed to the theory that it is usual for cancer of the stomach to be preceded by a simple ulcer."

It will be remembered that there appeared some years ago a series of papers professing to prove that a very high percentage—even 75 per cent. and upwards—of gastric cancers were preceded by definite clinical evidence of gastric ulcer. I pointed out at the time that this was contrary to all competent medical opinion, and that those who made such statements were dealing with such highly specialized material—chiefly gastric ulcer cases—as to make any such generalization impossible.

It is interesting to see that radiological experience is now supporting the clinical experience of observers who have to deal with all kinds of gastric cases. The error they oppose is a serious one, obscuring diagnosis and misdirecting treatment.—I am, etc.,

Exeter, Jan. 10th. W. GORDON.

THE MINISTRY OF HEALTH AND THE PROFESSION.

SIR,—I have no wish to engage in a controversy with Dr. Fothergill, but he ought not to be allowed to misquote my letter and misrepresent its tenor without a reply. Dr. Fothergill is, of course, at liberty to summarize as much as he likes, if he does it fairly, but when he places his summary within quotation marks and gives it a separate paragraphing he does what is not legitimate. I did not write what he quotes me as having written.

His misrepresentation seems to me to be equally deliberate, for on re-reading my letter I find no ambiguity. There was no invitation to the profession to concern itself with "politics and its many underhand ways," nor to indulge in any "deliberate individual partisan action on behalf of the present Ministry of Health." I distinctly said that "the politicians concerned may be left to look after their own case." The danger to which I drew attention was an attempt "to undermine the *position* and *machinery* of the Ministry [of Health] itself, and to discredit those of our own profession who are attached to it," particularly with reference to the equality of status of the medical and lay sides of the Ministry. This has nothing to do with party politics, or with specific questions of policy at all.

The Association was largely responsible for the setting up of the Ministry of Health with its present position and machinery. We felt very strongly about it, and Dr. Fothergill gave it as large a measure of support as he ever gives to anything. Now, when an attempt, with whatever motive, is being made seriously to degrade the importance of the Ministry, to make its medical side wholly subordinate to its lay side, and to prevent the publication and proper consideration of reports on medical and health subjects of vital importance to us all, Dr. Fothergill implores us to watch unmoved the destruction of much of the work which by our united efforts we so recently accomplished. I, on the contrary, assume that the principles we enunciated were seriously held, and that we still desire a Ministry of Health as a first-class department of State, within which, and in relation to which, the medical profession shall hold a position of importance second to none. If this be so, we ought now once more to emphasize these principles and this position, and neither to fold our hands nor, with Dr. Fothergill, to jump thoughtlessly to the aid of those who wish to relegate professional influence to its previous subordination in a variety of departments.—I am, etc.,

Hornsey, N., Jan. 8th. H. B. BRACKENBURY.

ADRENALIN IN RESUSCITATION.

SIR,—I have read the article on this subject by Dr. Cranston Walker, in your issue of January 8th, 1921, with much interest. I performed a number of experiments on this subject some twelve years ago and came to the conclusion that in adrenalin we had the most powerful agent yet discovered for resuscitating the apparently dead. I found that it was possible to revive cats that had been dead (from chloroform poisoning) as much as twenty minutes after all signs of life had ceased. In one experiment the heart was exposed and attempts at resuscitation were not begun for twenty minutes after the heart was seen to have stopped beating.

It was found that the most effectual method of using adrenalin was not by injecting into the heart, but by giving a saline infusion into the veins containing 1 in 50,000 adrenalin. This was almost invariably effective in restarting the circulation, and direct stimulation of the heart was not necessary, the heart being automatically stimulated by distension of the right auricle.

I believe it to be a most valuable method of restoring to life persons who have died suddenly from accident, but who have no vital injury, such as cases of electric shock, drowning, and chloroform poisoning. The difficulty of its application lies in the fact that the necessary person skilled in the use of adrenalin transfusion, and the necessary simple apparatus, are so seldom available when wanted.—I am, etc.,

J. P. LOCKHART-MUMMERY, F.R.C.S.

London, W., Jan. 10th.

A Disclaimer.

SIR,—I very much regret that my article "Adrenalin in Resuscitation" (printed in last week's issue, p. 46) has been quoted and misquoted in the lay press, in some cases under sensational headlines, and with free use of my name. My article was meant to be a brief and cautious note of some experiments and suggestions—a pendant to Mr. Welby Fisher's paper—possibly of interest to others working on the subject. Further publicity was never imagined, and is most regrettable. I take responsibility only for the article as printed in the BRITISH MEDICAL JOURNAL, and take no responsibility for any statement on the subject made in the lay press.—I am, etc.,

Birmingham, Jan. 11th. CRANSTON WALKER.

GLANDULAR FEVER.

SIR,—In the *Times* of to-day's date its medical correspondent calls attention to a mysterious infection, characterized by swelling of the glands round the angle of the jaw. I think it is probable that these are instances of glandular fever, which was first described by Pfeiffer in 1889, and of which a very good account was published by Sir Dawson Williams in 1897.

Glandular fever especially attacks children, but adults are not immune. Its principal characteristic is a rapid enlargement of the cervical glands deep to the sterno-mastoid muscle, usually towards its anterior border and about the middle of its length. There may be a previous period of malaise of twelve to forty-eight hours. The enlargement is sufficient to form a marked prominence on the neck. It may be entirely painless. The axillary and inguinal glands may also be enlarged, though to a much less extent, and also other glands in the neck. The spleen becomes palpable about the fourth day in a considerable proportion of cases. The temperature is commonly 101° to 103°, but may be higher. Changes in the fauces are very slight, and tonsillitis is absent. After a few days the glands in the neck subside rapidly, and convalescence is established in the second week. There is no rash. Suppuration is very rare. Complications are rare, the most frequent being a "haemorrhagic nephritis," which is apparently transient. Anaemia may develop, and convalescence is often prolonged. The glands may be palpable, though not visible, for several months. The blood in the acute stages may show a leucocytosis of 12,000 to 15,000 per cubic millimetre with a lymphocytosis.

As to diagnosis, it is distinguished from mumps by the swelling being distinctly below the angle of the jaw and by the freedom of the parotid. It is distinguished from infections of the fauces by the absence of tonsillitis and the slight degree of changes in the pharynx. The absence of anaemia in the acute stages will rule out the diagnosis of acute leukaemia.

Treatment in the acute stages is symptomatic, but care must be taken during convalescence. The onset is usually unilateral, and the opposite side may be affected subsequently, or occasionally a recurrence takes place on the same side. I saw a typical case from its onset in July, 1920, and since then I have seen two others in hospital practice, nephritis occurring in one instance.—I am, etc.,

London, W., Jan. 5th. H. LETHEBY TIDY.

PREVENTION OF VENEREAL DISEASE.

SIR,—The opponents of immediate self-disinfection seem to object to my having recommended that all boys and girls should have access to the latest scientific knowledge of this subject.

In speaking of boys and girls, I naturally referred to those who had reached the age of puberty. I did so designedly, being mindful of the prevalence of venereal diseases among the adolescent portion of the population.—I am, your obedient servant,

London, S.W.1, Jan. 7th. WILLOUGHBY DE BROKE.

SIR,—Having just read the letters on this matter by Mr. Wansey Bayly and Dr. Jane Hawthorne in your issue of January 1st, and, in consequence, having re-read the "Note" distributed by the Medical Women's Federation, which is the subject of the just criticism of these writers, I desire to add a few supplementary remarks.

Some weeks ago I received a copy of the "Note" in question from the Medical Women's Federation, of the existence of which body I was previously ignorant. This Note bore no further indication of its authorship. As one of the lecturers at the London School of Medicine for Women for a period of over twenty years, dating from the time before women were admitted to the *Medical Register*, I was led by perusal of this Note to the conclusion that it was merely a manifesto from an inconsiderable clique composed of members with far inferior intelligence to that possessed by the average classes to whom in past years I had the pleasure and privilege of lecturing. The authors of this document apparently lacked the courage to name the society against which they directed their farrago of erroneous and irresponsible statement. The whole of the "Note" contains nothing but expression of biassed opinions with no evidential basis whatever, and of deliberate misrepresentation of the principle and practice advocated by the Society for the Prevention of Venereal Disease.

I wish to subjoin to the weighty criticisms by Mr. Bayly and Dr. Jane Hawthorne the statement that such instructions relating to the disinfection of women as were given by this society were not considered as an essential part of the method of prevention which the society advocated. They were, in fact, inserted, with certain restrictions, mainly on the somewhat insistent representations of many medical women. It is, of course, well known that really efficacious disinfection is far more difficult of achievement in the case of women than of men, whether the attempt be made by the women themselves or by others; and it is clear that successful disinfection of males must entail freedom from infection of females and their progeny.—I am, etc.,

London, W., Jan. 4th. H. BRYAN DONKIN.

P.S.—Please allow me a short comment on one letter that appeared in your issue of January 8th, in reply to Mr. Bayly and Dr. J. Hawthorne. Dr. Otto May, while professing himself as "loath to intervene" in the discussion of this subject, intervenes without showing any cause. The statements he makes concerning "prevention" in the British army on the Rhine are unverified, contrary to those made by others who have inquired into the matter, and in all probability entirely erroneous. There is no available evidence whatever of the existence of any such army regulations or practice concerning immediate self-disinfection as are in harmony with what is advocated by the Society for the Prevention of Venereal Disease. If such regulations do exist they must be concealed with remarkable success

and carried out very inefficiently. The rest of Dr. May's letter consists of a repetition of more opinions, expressed by him in very fallacious logic, to the effect that the Society's instructions sanction and incite to "immorality." What amount of weight can be attributed to any of Dr. May's opinions on this subject will become apparent when it is remembered that he was for some time secretary to the National Council for Combating Venereal Diseases, which has always opposed scientific prevention by medical means; that later he began to speak fervently in favour of medical prevention, and joined the Society he now so grossly misrepresents; and lastly, that he subsequently changed his mind again, resigned his membership of that Society, and went back to the "National Council."

January 9th. H. B. D.

CLAUSE 7 OF THE CRIMINAL LAW AMENDMENT BILL.

SIR,—Since in Clause 7 of the Criminal Law Amendment Bill the suggestion has been made to penalize any person imparting venereal disease to another person, and to penalize solicitation on the part of a person suffering from venereal disease, I have been attempting to inquire into the history of cases coming for treatment to a clinic from this point of view. I have come to the conclusion that the difficulty in the way of obtaining evidence will make Clause 7 a possible source of profit to those wicked women who are ready to take any means to mulct men, but I fear that it will be of little or no use to the women who are sinned against, even if it does not lead to the men who have wronged them actually incriminating them as the source of the disease. The difficulties it will bring to medical men and women are obvious. These should be ignored if the clause were likely to work justly, but the possibility of our being used to give evidence by order of the court, which evidence may tell against what we believe to be the truth, is a prospect we must seek to avoid.

May I give a few examples to illustrate how such a clause might be used to obtain blackmail or cause a miscarriage of justice?

1. A wife, married three months to a seaman, appeared with generalized syphilis in a communicable form. If this woman brought an action against her husband, the evidence of the medical officer who examined the wife would be against the husband. Even if he could bring medical evidence to show he had no sign of syphilis, he would not have cleared himself, for he might have had a lesion and no sign be left. This woman admitted that she had been infected before marriage, and thought herself cured after a few injections. If she chose to say nothing of this, could she not use Clause 7 to levy blackmail on her husband?
2. A wife with generalized syphilis in a communicable form gave a history that signs had previously appeared in her husband. Again, might not the medical officer under Clause 7 be compelled to give evidence for the wife, though he or she might believe the wife guilty? This wife volunteered the information that she had exposed herself to infection from a man she had never seen before nor since, "because the money would be handy over the week end," that she had exposed her husband to infection the same evening, and that he had developed the disease first. If she had not volunteered this statement, would she not have had a good chance under Clause 7 of incriminating her husband?
3. A wife with generalized syphilis in a communicable form demanded a certificate to prove she was free from venereal disease because her husband threatened to divorce her unless she obtained such a certificate. In this case the medical officer could be obliged by the court to give evidence which would incriminate the wife; yet I believe that woman sinned against by the husband, who subsequently deserted her.

Before this clause becomes embodied in an Act of Parliament, can the British Medical Association do anything to so modify its wording that vexatious litigation and possible miscarriage of justice may be prevented? So far as the introduction of the word "knowingly" goes, I am afraid it will not do more than deter wicked men and women from getting treated at clinics, whence evidence of their knowledge may be forthcoming. Will it prevent them from going to medical men privately, and using them as pawns to play their game?

If the clause cannot be so worded as to make it impossible for it to be used to work more harm than good, cannot the British Medical Association do something to get it omitted from the Act?—I am, etc.,

Cardiff, Jan. 2nd. ERIE EVANS, M.B.

THE RISKS AFTER OPERATIONS FOR TONSILS AND ADENOIDS IN OUTDOOR CLINICS.

SIR,—That the operation for the removal of tonsils and adenoids is often far from satisfactory, sometimes fatal, not infrequently complicated with severe septic affections, and that it far too often fails to remove the symptoms for which it was done, even when repeated more than once, can hardly be put down merely to negligence of the hospital authorities in providing suitable accommodation, since it is well known that such unfortunate occurrences are to be noted even when every precaution is taken at the time and for the period of convalescence.

The troubles would appear to arise largely from the lack of preparation and of education of the patient beforehand. In other conditions where operation is found to be necessary surgical cleanliness is universally aimed at. Surely this scientific principle should be applied to the throat and nose.

In many cases when the patient is already on the table, the nasal cavities themselves as well as the nasopharynx are found to be packed with muco-purulent discharges, and in advanced cases of nasal stasis one is apt to find that the child has never learnt the elementary hygienic practice of clearing its upper air passages by blowing the nose fully and correctly. In such cases the teaching of this, the only method of dealing safely with one of the most destructive of the waste products, is a work of skill and of patience.

The teeth, too, are often in a neglected state, and the fact that the mouth and the nose are both parts of the same cavity is overlooked. Mouth-breathing, too, has been the habit for so long that soft foods have taken a chief place in the diet. The teeth then have become loose and the gums septic.

Before one can reasonably hope to be more or less safe and avoid the complications to which Sir William Milligan calls attention in his letter of December 20th, 1920, these details should have the attention necessary, as they do elsewhere.

The nose appears to be an efficient filter of most of the air-borne germs—if not of all—but it can only do its work if it is kept in a healthy condition, free from all contaminating collections. Good habits must be instilled into the child in its early days. Were the domestic animals to store their waste products of respiration till these reached an advanced state of putrefaction, by drawing them back into their heads as children are so often allowed to do when they sniff, they would become unbearable and a great source of danger to themselves, their kind, and their owners.—I am, etc.,

OCTAVIA LEWIN,
Rhinologist to the Roll of Honour Hospital, Paddington, and to the London County Council.

London, W., Dec. 28th, 1920.

SIR,—All those who have anything to do with these cases must welcome the discussion now taking place. I have always looked upon the way in which they were treated in hospital after operation as almost a scandal; there is no need to emphasize the risks involved, but I do think it is important that the profession should speak plainly.

More than twenty years ago I remember asking a friend who had operated on a patient of mine in a nursing home why, when he kept the child in for five days after operation, he sent his hospital patients home in as many minutes; his reply was almost in the words that I see used by one of your correspondents: "It is a highly unsatisfactory, but, under existing circumstances, necessary procedure." "To expect hospital authorities to provide the accommodation for the ideal treatment of these very numerous cases is, I think, unreasonable."

It is because we have been saying this to ourselves for twenty years that so little has been done to improve matters; the public will do nothing so long as we allow things to remain as they are, and this applies not only to the particular case now being discussed, but to the whole question of hospital accommodation. We are responsible for the education of the public as to the need of making provision for those large classes of cases which require, but at present do not receive, institutional treatment—such, for instance, as the numerous medical cases which have not in the past been generally considered as hospital cases, maternity cases and others that it is not necessary here to

detail. Although the present moment is inopportune for the actual provision of these beds, there is no need for us to delay our campaign of education; we must make it generally realized that these things are essential for the public welfare, and we should now be making our plans ready to put them into operation as soon as opportunity occurs.—I am, etc.,

Bradford-on-Avon, Jan. 3rd. CHAS. E. S. FLEMMING.

EPILEPSY CONSIDERED AS A SYMPTOM.

SIR,—In his article on this subject in your issue of January 1st, Dr. Taylor, correctly, as I think, insists that epileptic convulsions may occur as a syndrome in various morbid conditions and that there is no disease entity to which the term epilepsy can be applied. He rightly urges that "each case of recurring convulsion must be studied by itself," yet he states that he has been "not a little disappointed and surprised at the tendency which has lately become obvious towards an attempt to approach its explanation on other grounds than that of physical disturbance." If epileptiform seizures may occur as a symptom in a variety of morbid states, as Dr. Taylor is at pains to show is the case, why should he be either disappointed or surprised when investigators of the symptom approach the subject open-mindedly and are prepared to take into consideration, not only physical, but psychical, disturbances as of etiological significance? The very fact that "there is no such thing as a case of ordinary epilepsy" should deter anyone from undertaking observations on this symptom with a preconceived limiting hypothesis in mind. Many eminent authorities have investigated the subject of epilepsy from various points of view, and have profitably extended their studies to include also the interparoxysmal period. Indeed, it is chiefly to those who have refused to confine their attention wholly to physical disturbances that we owe the conception of epilepsy as a syndrome, not as a disease. I am not presumptuous enough to take up the defence of those who have disappointed and surprised Dr. Taylor, but I should like briefly to give the histories of two cases which came under my care last year, in order to show that psychic factors may in some instances be responsible for the symptom of epilepsy. Dr. Taylor wisely says that a study of Jacksonian attacks is likely to be illuminating, and my first case is of this nature.

He was a young man aged 22, of good family and personal history. He had served as a naval gunner on a merchant ship during the war. On the first night after his demobilization he had an epileptiform seizure, and continued to have them almost every night until he came under treatment in June, 1920. In the daytime he had typical Jacksonian fits beginning with movements in the fingers which spread up the right arm. The arm was gradually brought up in an extended pose to the level of the shoulder, with the index finger pointing, but the hand otherwise tightly closed. These attacks could be aborted if the arm were tightly seized and rubbed; but if this were not done unconsciousness and generalized convulsions often ensued. The Jacksonian fits invariably occurred in the afternoon, between 3 and 5 o'clock, and at the time he came to me he was having three or four every afternoon.

After taking a careful history I put the patient under light hypnosis, when he revealed the following repressed experience. One afternoon, while he was acting as gunner on a ship in a convoy off the north coast of Ireland, a hostile submarine had emerged at a range of only 500 yards. He pointed her out excitedly to his mates, giving the range. They opened fire, but were over their mark, and the U boat submerged but only to reappear at a greater range. Again they fired, but unsuccessfully, and again the U boat submerged. It was not seen again, but the watch was doubled, and the patient ordered to his bunk immediately, as he would have to take two consecutive watches of four hours each (actually from 12 midnight to 8 a.m.). His state of nervous tension and apprehension under these conditions may well be imagined. This memory, recalled under hypnosis, was then restored to his general consciousness, and he has never since that day had a Jacksonian fit.

He is also free from epileptiform seizures at night, though for a time, after any unusual excitement in the day, he used to toss about in his sleep, call out "We will give it them," and occasionally fell out of bed. As space is limited I will make no further comment on this case, which seems to me to tell its own tale. No drugs or any other form of treatment were employed.

Dr. Taylor mentions the so-called "nocturnal epilepsy," and suggests that the condition of sleep rather than the time of day determines the onset of the convulsions. The following case supports this conclusion, though it does not favour his further presumption that some condition of nutrition or circulation is the cause of the convulsions.

A young man, aged 23, enlisted at the end of 1914, and was sent to work on munitions until March, 1917, when he was called up for training. In August, 1917, he was being transported to France (Le Havre); the voyage was rough and prolonged on account of reported menace from submarines. The man felt very sick and exhausted. In this state he lay down and tried to go to sleep. He then began to twitch all over and went off into an epileptiform convulsion. On arrival at Le Havre he was so helpless that he had to be carried off the boat to hospital. He was discharged from hospital in a week, and after a short stay at a convalescent camp was sent up to join his battery at the front. After a few days the battery was subjected to a heavy bombardment. The man was at the commencement of this in a dug-out by himself, but he rushed out and entered another dug-out which contained two other men. There he had another epileptic seizure. He was evacuated to the base and then to the United Kingdom. At Brighton he had frequent seizures which lasted about twenty minutes and always occurred at night, except on one occasion when he went to sleep in the afternoon and then had a convulsion. Eventually he was seen in a "fit" by the medical officer, certified as epilepsy and discharged from the service.

At the time he was sent to me he was having seizures about once a fortnight. They always occurred at night, generally when he was in a twilight or half-asleep state. Often before the convulsion came on he would partially wake up and lie for some time in a dreamy condition; then an aura as of the smell of a boat would precede the onset of a convulsion. Next day he felt dizzy, dull, and lethargic. Psychological analysis was undertaken, and the patient came to realize the meaning of his attacks and the repressed fear which underlay their initiation. Since this he has only had two convulsions, both following certain excitations which were analysed and showed a direct stimulation of the original complex. In my opinion these two cases serve conclusively to show that amongst the many causes of the epileptic syndrome psychical ones have a place.

It is far from my intention to argue that psychical factors only produce the syndrome, but I equally deprecate any attempt to attribute it exclusively to physical disturbances, whether these be an undefined cortical irritation, nutritional or circulatory changes, or endocrine dysfunction. In agreeing to consider epilepsy as a syndrome and not as a disease let us also agree to be entirely unbiassed in our search after its many possible etiological determinants.—I am, etc.,

Birmingham, Jan. 8th. ALFRED CARVER.

ANGIO-NEUROTIC OEDEMA.

SIR,—I was much interested in Dr. Swan's letter upon this subject in the JOURNAL of January 8th. I fear, however, that he may be disappointed as to the curative value of horse serum. Some years ago I had a conversation with Sir William Gowers, who remarked that there were probably palliatives, but probably no cure, as he considered this condition to be an expression of the "gouty diathesis." I have been fortunate in seeing my share of these cases, and, while not quite in accord with Sir William as to the origin he thought invariable, I must confess I have never yet seen a case in which recurrence, sometimes long delayed, has not taken place. I gave some of my experiences of this disorder in a memorandum to the *Lancet*, June 2nd, 1906, and to your JOURNAL, May 22nd, 1915, and will now but repeat that it appears to me to have its place amongst the paroxysmal neuroses. Whether or not it is (oppositely) related to epilepsy is an interesting theory. Perhaps Dr. Davis, who recorded a case in the JOURNAL of April 3rd, 1915, may have further remarks to make.—I am, etc.,

Exeter, Jan. 9th. CLAUDE A. P. TRUMAN.

THE BEGINNINGS OF LIFE.

SIR,—Your interesting article suggests that biology is played out and that chemistry can tell us all about it. It appears that the chemists have proved that "fresh-water and marine algae" get their N from the air. There is nothing new about this (Green, *Vegetable Physiology*, 1900, p. 179). Most of the N-fixing algae turned out to have the N fixed by symbiotic bacteria. Still in regard to some the evidence was suggestive. Probably Professor Moore and his associates have definitely settled the matter for certain species, but this would scarcely justify generalization. Your last sentence, however (probably quoted from the chemists), proclaims the general misapprehension of the terms bacteria, fungi, and algae.

In amoeba there is a nucleus, cytoplasm, contractile vesicle, etc. It is a lowly organism compared with "marine and fresh-water algae," but it is by no means primitive. Bacteria are much nearer to primitive plants because no nucleus is demonstrable in the largest, and simple cellular division is the only mode of increase. Some have acquired a cell wall which enables them to form spores, but absence of nucleus imposes a limit of one spore to one bacillus. In the absence of photosynthesis nutrition may be difficult, but there still survive nitrifying bacteria which form combined C without chlorophyl (Bower, *Botany of the Living Plant*, p. 105). Even these have solved the N and C riddle, yet Moore and Webster think it more promising to study such "marine and fresh-water algae" as could exist in the "primordial world."

Out of their legions of algae let us take the most primitive, the unicellular blue-green. In a few the mode of increase is almost as primitive as in the bacteria, yet the lowest has a cell wall and colouring matters which include chlorophyl. For a tiny protoplast the synthesis of chlorophyl was a mighty achievement, and marked the beginning of a new epoch. But the spark of life flickered fitfully for ages before this, and it is possible that bacteria are the sole survivors of the pre-chlorophyllous age.

In order to compare them with bacteria the blue-green algae are often called Schizophytes, which is pernicious nonsense. It is certain that 70 per cent. of known forms increase by hormogones and spores and not by fission, and that some branch habitually. Besides, there is always a demonstrable incipient nucleus the existence of which is rendered possible by food reserves accumulated by the chlorophyl. Cellular division is always amitotic. Nevertheless, the nucleus remains an open and imperfect one, and this accounts for complete absence of sexuality (West, *Algae*, 1916, p. 39).

In the case of Dodder we may speak of degradation, because in its flowers and in its tissues we have evidence of its origin and of its fall. But what evidence is there that bacteria are degraded algae? Every other division of plants has contributed to the saprophytes—why not the lowest, the bacteria? Contrary to what obtains in the bacteria, in the fungi there is evidence that they are derived from algae.

It has been pointed out that the achievements of the blue-green algae were the synthesis of chlorophyl and the differentiation of part of the cytoplasm as a nucleus, and that they were only partially successful with the nucleus and failed to reach sexuality. Consequently their line of development leads into a blind alley, and they helped evolution mainly by contributing organic material for the needs of others. One must go back to the common stock (now enriched with this material) to find a starting point for higher forms. From a crowd of simple forms botanists are agreed that a type emerged which is fairly represented by *Euglena*. Unicellular, sometimes with and sometimes without chlorophyl, but always possessing a stable nucleus, it is motile for part of its life, but encysted in times of stress. And the latter stage became more or less fixed—a plant—in such forms as *Protococcus*, *Chlamydomonas*. The nucleus was soon perfected, mitosis established, and sex developed with an increasing complexity of structure in the plants which issued in the green, the brown, and the red algae to colonize successfully the waters of the world.

For our purpose it is sufficient to direct attention to one branch of the green algae which terminated in Vaucheria. Mr. Massee remarked (*Textbook of Fungi*, 1910, p. 183):

"The Phycomycetes are most nearly in touch with the algae; there is the same structure save in the absence of chlorophyl; this last feature in reality constitutes the only difference between many and such algae as Vaucheria." And he added (p. 185): "the Oomycetes, the most primitive fungi, . . . would come from Vaucheria," and he explains (p. 21) that in these lowly fungi "reduction in number of the chromosomes, from eight to four, takes place in the gametogenesis."

It will now be understood how far astray are those who link up bacteria with organisms so elaborate as even the lowest fungi. The only possible view is that the fungi are certain higher algae which have become saprophytic and achlorophyllous. Now we can understand that Moore and Webster prefer to work, not with the complex and atypical, but with the simple algae.

Such a dissertation is provoked by the fact that in recent years medical writers have been spinning yarns about the fungi. Just before the war the magazines told us how bacteria and yeasts arise *de novo* in test tubes. The nucleus of a torula is more complex than that of the blue-green algae, and bacteria have no nucleus at all, yet we were assured that the first as well as the last arise indiscriminately as the result of a cross between a sunbeam and a salt solution. In a popular book Professor B. Moore has almost acquiesced in this, in spite of the absence of marine and fresh-water algae. In your own columns recently a writer described a method of culture by which a meningococcus was transformed into a meningoascus of which he gave photographs. The gulf that separates the meningococcus from the ascomycetes cannot be bridged by horticulture.—I am, etc.,

ROBERT CRAIK, M.D.Glasg.

West Ealing, W., Dec. 29th, 1920.

ARTIFICIAL LEGS.

SIR,—I have been much interested in reading the article on artificial limbs in your issue of December 18th, 1920. The very equitable way in which you have reviewed the situation leads me to believe that some of my own experience may be of help in the very vexed question of light limbs.

In an experience of many years, not only in my own practice, but in that of my fellow artificial limb-makers, the question of lightness has ever been present, and I venture to say that at the present time limbs for above-knee amputation made of wood can be produced as light as their prototypes in duralumin.

No lighter limb exists than the British Anglesey type, which is practically constructed in wood (willow), only a small portion of the knee and ankle bolt being of metal. Numbers of these have been many years in wear, and the various British artificial limb-makers can testify to the ease with which their patients have used, and are still using and wearing, these limbs.

In your article you state that "the only type of limb which approaches in weight to 9 lb. is that made for exarticulation at the hip." It is quite true that the type of limb for this amputation is one where the reduction of weight is of the greatest importance. Recently I have turned my attention to the construction of these limbs with duralumin lower portions, that is to say, the limb from the tilting table downwards is constructed in duralumin alone. It is a fact that where two limbs are made of equal weight—namely, one of leather tilting table and willow lower portion, the other with leather tilting table and duralumin lower portion—the duralumin limb will invariably be pronounced by the patient to be the lighter of the two, from the fact that the centre of gravity has been brought nearer to the body, and the dead weight of the lower limb has been enormously decreased.

By the above remark it would be inferred that both limbs, either made of willow or duralumin, weigh the same. In my earliest experience I found this to be the result owing to the amount of strengthening by steel required in the duralumin lower portion; but experiments have been made and the experience gained enables me to produce an artificial limb for through hip amputation with duralumin lower portion weighing seven pounds. This reduction in weight is a very considerable item.

Further, in your article you say that for amputation below the knee "no light metal limb has yet been put forward which has any advantage in weight or otherwise over wood, leather, and steel." For some considerable time past I have designed and made a light duralumin limb for below-knee amputation which has been an

unqualified success in every way. A number of these limbs are now in use both for officers and for many of my private cases who had already been fitted with leather and wooden limbs, and each patient has expressed the greatest relief from weight and a more ready use of the limb when the duralumin limb is applied. These limbs are in use by many who are able to dance perfectly, ride, shoot over the roughest ground, play tennis, golf, and follow the life they led previous to their disability; amongst lady patients, several of whom are delicate, the change from the old limb to the duralumin limb has been of the greatest benefit.

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In 1843 His Majesty's judges were summoned to advise the House of Lords in the case of one Macnaghten, who was charged with murder. Insanity had been pleaded as a defence. The opinion which the judges expressed has been adopted ever since. The material words are:

"The jury ought to be told in all cases that every man is presumed to be sane, and to possess a sufficient degree of reason to be responsible for his crimes, until the contrary be proved to their satisfaction; and that to establish a defence on the ground of insanity, it must be clearly proved that at the time of committing the act the accused was labouring under such a defect of reason, from disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know what he was doing was wrong."

Sir Robert Armstrong-Jones is not the first member of the medical profession to dissent from this opinion. In the latest edition of *Taylor's Medical Jurisprudence* the late Dr. F. J. Smith pointed out that in 1894 a committee of members was instructed by the Medico-Psychological Association to report on the subject. They did so in 1896. They concluded their report by saying that:

"While not approving the doctrines and definitions contained in the judge's answers to the House of Lords in 1843, we are at present unable to make any recommendations for the amendment of the law."

One of the points in dispute between the lawyers and the medical profession is the meaning which should be attached to the word "wrong" which occurs in the definition. The lawyer has his own conception of the word; and as it is his task to explain matters to the jury the result of a trial where insanity is pleaded is often curious. Nor are the lawyers themselves altogether satisfied with the definition.

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"after all, order has to be maintained, and it is no use criticizing the formula in Macnaghten's case unless you can substitute some effective formula in its place which will not have the effect of removing all criminals from a gaol to an asylum."

Not only does the rule in Macnaghten's case hold the field, but, as was pointed out in a leading article published in this JOURNAL in 1914[1] when commenting on the case of Rex *v.* Felstead, a man who is found "guilty but insane" has no right of appeal from that part of the verdict which finds him insane, although it had been decided in a previous case (Rex *v.* McHardy) that he may appeal from that part of the verdict which finds him guilty! It follows that under the present law a man may be detained at Broadmoor for the rest of his natural life if the jury, under the direction of the judge, find that he was not responsible for his actions. Everything depends upon the view of Macnaghten's case which a particular judge lays before the jury. One learned judge is said to have boiled the matter down to a single sentence: "Could he help it?" Such a definition is much too vague—especially in a court of criminal jurisdiction.

As Lord Justice Duke intimated in the course of a speech which he delivered at the recent dinner of the Medico-Legal Society: "There should be no doubt upon a rule affecting matters of life and death." It ought not to be difficult for lawyers and doctors to put their heads together in order to arrive at a definition satisfactory to both; but in the meantime it is well to remember that in the vast majority of cases where insanity is pleaded in courts of law, medical testimony is decisive, and that is commonly the evidence of a single witness. For example, there are scores of cases in which the prisoner, on his arraignment, either refuses to plead or answers in such a way as to render it doubtful whether he understands the meaning of the question, "Are you guilty or not guilty?" The jury are then sworn to try whether he is or is not fit to plead, whereupon the prison doctor is called to speak as to his mental condition, and his evidence is absolutely conclusive.

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DR. LAURENCE HERSCHELL LEVI HARRIS has died at his residence in Sydney after an illness extending over three months. He was born in Sydney in 1871, and educated at the Sydney Grammar School and afterwards at the Sydney University, where he graduated M.B., Ch.M. in 1896. After graduation he became one of the resident medical officers at the Sydney Hospital, and subsequently was appointed medical superintendent. As he had always been keenly interested in photography he naturally took to *x*-ray work, a subject which at that time was being introduced all over the world. He was thus one of the pioneers in this branch of medical work, and was the recognized leader in it in Sydney. Like most workers with the *x* rays he was attacked by dermatitis, and this led to the loss of one of his fingers as well as to constant trouble with his hands for many years. He was appointed honorary radiographer to the Sydney Hospital in 1900, a post he held for fifteen years; he was then appointed honorary consulting radiographer. He was subsequently appointed honorary radiographer to the Royal Prince Alfred Hospital, and at the time of his death he held this appointment, and a corresponding post at the Royal Alexandra Hospital for Children, at the Tubercular Dispensary, and at the Australian Jockey Club Home for Wounded Soldiers.

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Harris was a man of most kindly disposition, ever willing to share his knowledge and experience with others, and was much liked and trusted by his fellow medical men, who were always ready to take his advice as to the treatment of any of their relatives. He was given a military funeral, which was attended by a large number of his fellow military officers and other medical men. The service at the graveside, in Rookwood Cemetery, in the Jewish section, was conducted by Rabbi Cohen.

DR. ALFRED WILSON EMMS, who died recently at Thurcaston, was born at Kingston-on-Thames in January, 1850. He was educated at the Ilminster Grammar School and Guy's Hospital, took the diplomas of M.R.C.S. and L.S.A. in 1872, and graduated M.D.Durh. in 1893. He

had practised at Belgrave, Leicester, for over forty years, and only removed to Thurcaston in September last. At the end of 1919 he resigned his professional appointments, but still continued his private practice. He took great interest in local affairs, was a J.P. for Leicestershire, chairman of the trustees of the Belgrave Church Estate Charity, and a member of the Leicester and Rutland Division of the British Medical Association. Dr. Emms is survived by his widow and a married daughter.

DR. ROBERT SLATER MAIR died in London on December 21st, 1920, aged 94. He was born at Paisley in 1826, was educated at the universities of Edinburgh and Glasgow, and took the M.D. at St. Andrews in 1850, and the F.R.C.S.Edin. in 1863. Soon after qualifying he went to India, and spent seventeen years in private practice at Madras, also holding the posts of deputy coroner of that city and medical officer of the local volunteer corps, the Madras Volunteer Guards. While in India he wrote two once popular works, *The European in India and Medical Guide to Anglo-Indians, 1873*, and *On the Management of Children in India, 1875*. On his return to England he set up in practice in Bayswater, and for forty years held the post of inspector of factories for the City of London, till he resigned some four years ago. He had also been physician to the Persian Embassy, and was a vice-president of the Harveian Society. While in Madras he married Miss Mary Anne Batchelor in 1862, and in 1912 celebrated his golden wedding. He had a family of five sons and three daughters, all of whom, except the eldest son, survive him. Two of his sons, Lieut.-Colonel R. J. B. Mair, late R.E., and Colonel G. T. Mair, D.S.O., late R.A., received the C.M.G. for their services in the late war.

WE regret to record the death in tragic circumstances of DR. ALEXANDER WILLIAM MATHER, of Norton-on-Tees. Dr. Mather studied medicine at the University of Edinburgh, graduating M.B., Ch.B. in 1912, and proceeding M.D. in 1916. After acting as resident house-physician at the Royal Infirmary, Edinburgh, resident surgical officer at St. Mary's Hospital, Manchester, and senior house-surgeon at the North Riding Infirmary, Middlesborough, he settled in practice two years ago at Norton, where he was very popular. His death was the result of burns produced by an explosion in his garage while he was preparing his car for a professional visit. Dr. Mather leaves a widow and young child.

WALTER GIBSON MARSDEN, late Captain R.A.M.C.(T.C.), died in St. Thomas's Hospital on December 19th, 1920, after a long illness, contracted on active service. He was the eldest son of Walter Marsden, of Fairfield, Manchester, and was educated at St. Thomas's Hospital and at Cambridge, where he graduated as B.A. in the Natural Science Tripos in 1908 and as B.C. in 1911, also taking the M.R.C.S. and L.R.C.P.London in the latter year, after which he filled the posts successively of house-surgeon, casualty officer, resident anaesthetist, obstetric house-physician, and resident accoucheur at St. Thomas's. He took a temporary commission as lieutenant in the R.A.M.C. on April 26th, 1916, and was promoted to captain after a year's service. Before going abroad he served in the British Red Cross Hospital at Netley.

WE very much regret to record the death at the age of 54 of Mr. S. ARCHIBALD VASEY, F.I.C., F.C.S., who was for thirty years consulting analytical chemist to the *Lancet*. For a long succession of years he attended regularly the annual meetings of the British Medical Association, and his interest in the Annual Exhibition of Foods and Drugs made him a familiar figure to many members of the medical profession. Mr. Vasey was an able chemist, a fluent writer, and the most kindly and agreeable of companions; his genial personality endeared him to a wide circle of friends. He died at his home in Bromley, Kent, on January 7th.

Universities and Colleges.

UNIVERSITY OF OXFORD.

THE next examination for the Diploma in Ophthamology will be held on July 18th. Full particulars of courses of instruction, which commence on April 25th, can be obtained on application to Mr. P. H. Adams, Margaret Ogilvie Reader in Ophthalmology, 53, Broad Street, Oxford.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on December 15th, 1920.

The following were recognized as teachers of the University in the subjects and at the institutions indicated:—*King's College:* Dr. Orlando Inchley (Pharmacology). *St. Bartholomew's Hospital Medical School:* Mr. T. P. Dunhill (Surgery). *St. Mary's Hospital Medical School:* Dr. C. McMoran Wilson (Medicine). *National Dental Hospital and College:* Mr. J. L. Dudley Buxton (Dental Surgery), Mr. A. B. G. Underwood (Dental Anatomy).

Sir Cooper Perry was appointed a member of the King's College Delegacy for the remainder of the period March 1st, 1920, to February 28th, 1921, in succession to Sir Charles J. Lyall, deceased, and a member of the Central Council of the Federated Superannuation System.

The annual report of the Graham Legacy Medical Research Committee, giving particulars of the general progress of the laboratory, was received, and Professor A. E. Boycott, F.R.S., was reappointed director of the laboratory for one year from January 1st, 1921.

It was decided to institute a university chair of anatomy at St. Bartholomew's Hospital Medical School.

It was resolved that a candidate for the Diploma in Psychological Medicine who has passed the examination of M.D. in Branch III, Mental Diseases and Psychology, be exempted from examination in psychology and psychological medicine, and be awarded the Diploma in Psychological Medicine on satisfying the examiner for the diploma in Part A (i), "Anatomy, histology, and physiology of the nervous system," and Part B (i), "Neurology."

Dr. F. R. Fraser, as already announced in the JOURNAL, has been appointed to the university chair of medicine, tenable at St. Bartholomew's Hospital for a period of four years from October 20th, 1920.

The William Julius Mickle Fellowship of the value of £200 has bern awarded to Miss Harriette Chick in recognition of her important work on diseases due to defective nutrition.

The University medal at the M.B., B.S. examination (October, 1920) has been awarded to Mr. Ronald M. Handfield-Jones of St. Mary's Hospital.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have been approved at the examinations indicated:

SURGERY.—*†S. Davies, †R. F. Divecka, *W. Kilroe, *†M. Melglave, †J. B. Williamson.

MEDICINE.—*†S. Davies, *†L. Dinerstein, *†C. T. Gasking, *H. D. L. Jones, *†R. J. Little, *†E. R. D. Nagel, *†W. R. Ranson, *C. Verheyden.

FORENSIC MEDICINE.—S. Davies, R. J. Little, S. E. J. Miedema, W. R. Ranson, B. W. Roffey, C. Verheyden, J. B. Williamson.

MIDWIFERY.—J. H. Cooper, S. Davies, S. E. J. Miedema, M. Tcherny.

* Section I. † Section II.

The diploma of the Society has been granted to Messrs. S. Davies, R. F. Divecka, R. J. Little, E. R. D. Nagel, and W. R. Ranson.

The Services.

HYGIENE IN THE ARMY.

A RECENT Army Order provides for the establishment of command schools of hygiene at Aldershot (when the transfer of the school at Blackpool is effected); Hertford Barracks, Hertford; Strensall Camp, near York; Dreghorn Camp, near Edinburgh; Hilsea Hutments, Portsmouth; and Carrickfergus. These schools are to be permanent centres of instruction for staff and regimental officers and for regimental sanitary personnel; and they will maintain close liaison with neighbouring units in order to facilitate the demonstration of the principles of practical hygiene on model lines. Four classes for officers will be held annually, and the classes for regimental non-commissioned officers and men will extend over a period of three weeks. Classes for personnel of the Royal Air Force will run concurrently with the army classes, and Territorial Force sanitary companies will be attached to the command schools for instruction during their period of training.

DR. A. J. H. MONTAGUE, Commandant of the Worksop Nursing Division (V.A.D.) since its inception, and Mrs. Montague as lady superintendent, have, on the occasion of Dr. Montague's retirement from active practice, been presented by the members thereof with a Doulton-ware dinner service as a mark of their esteem.

Medical News.

THE committee of the Royal Medical Benevolent Fund Guild, anxious to devise new means of obtaining the financial support so greatly needed, recently gave a dance at the house of Sir StClair Thomson, who generously bore all the expenses, including a band and refreshments. The Guild benefited to the extent of over £100. Anyone inclined to follow this generous example should communicate with the Secretary of the Guild, 19, Portland Place, W.1.

A SPECIAL course of systematic lectures and clinical demonstrations will be given at the National Hospital for Diseases of the Heart, Westmoreland Street, W.1, on Mondays, at 5.30 p.m., commencing on January 17th.

THE course of lectures on the History of Science at University College, London, was resumed on January 12th, when Dr. Wolf gave an introductory lecture on the general history and development of science. On Tuesdays at 5.15 p.m., beginning on January 18th, Dr. Charles Singer will lecture on the history of the biological and medical sciences from early times to the eighteenth century; his course on the development of medicine in modern times will begin on Monday, March 7th, at the same hour.

A COURSE of twelve practical demonstrations on the management and feeding of infants and young children will be given by Dr. Eric Pritchard at the St. Marylebone General Dispensary, Welbeck Street, W., on Tuesdays and Thursdays at 10.30 a.m. and 3 p.m. respectively, commencing on January 18th. The fee for the course is £2 2s. Opportunities will be afforded to those attending the course of visiting, on Saturday afternoons, the Nursery Training School, 1, Wellgarth Road, Golders Green, and seeing the methods employed in dealing with infants.

A NEW publication, *The American Journal of Hygiene*, is announced to appear this month. The editor is Dr. William H. Welch, and he will have the assistance of twenty-three colleagues at Johns Hopkins University and elsewhere, and with Dr. Charles E. Simon as managing editor. The new journal is supported by the De Lamar Fund of the Johns Hopkins University, and it will be published by the Johns Hopkins Press, Baltimore. Its object is the publication of papers representing the results of original investigations in hygiene, using this term to cover all applications of the mathematical, physical, chemical, medical, and biological sciences to the problems of personal and public hygiene. It is proposed to issue at least six numbers a year, and the price, post free, will be 6.00 dols. a volume at home, 6.25 dols. for Canada, and 6.50 dols. in other countries.

INQUIRIES have been made regarding the continuance of the Maudsley courses for a diploma of psychological medicine. We are asked to state that, if sufficient applicants are forthcoming, Part I of the third course of lectures and demonstrations will be commenced in April. Intending applicants should communicate as soon as possible with the Director, Pathological Laboratory, Maudsley Hospital, Denmark Hill, S.E.5.

ON Wednesday, January 19th, at 5.30 p.m., in the Psychological Laboratory, King's College, Strand, Dr. William Brown will begin a two-terms' course of weekly lectures and demonstrations on experimental psychology for medical men who are preparing for the diploma in psychological medicine. The class is limited to ten members, and intending applicants should write at once to the Secretary, King's College, Strand, W.C.2, for particulars of fees, etc. Dr. Brown's opening lecture on psychopathology on Tuesday, January 18th, at 5.30 p.m., will be entitled "The structure of the normal personality."

A VENEREAL DISEASE COMMISSION was dispatched in September, under the aegis of the Colonial Office and the National Council for Combating Venereal Diseases, for the purpose of assisting local authorities in attacking the problem of venereal disease in the West Indies. In Jamaica local organizations are already carrying out propaganda work under the auspices of the National Council, and in Trinidad a branch is in process of formation.

VOLUME I of the fourth series of *Guy's Hospital Reports*, under the general editorship of Dr. A. F. Hurst, will shortly be published by the Oxford Medical Publications.

THE second Congress of the History of Medicine will be held at Paris in August, 1921.

THE twentieth annual report of the Canadian Association for the Prevention of Tuberculosis has just been published. It contains reports of the local antituberculosis societies throughout the Dominion, which appear to be carrying on a great deal of valuable work with commendable keenness. The report includes also the transactions of the annual meeting of the association which was held at Vancouver in June, 1920, when papers were read by the president, the Hon. F. L. Schaffner, M.D., and others, and interesting discussions took place. In Vancouver itself the initiative was taken and the necessary funds raised for the well-equipped new tuberculosis dispensary now in existence there by a local business men's social club of only 150 members, the Rotary Club, which handed the dispensary, when completed, over to the city.

ON January 5th Dr. Smart Evans of Cardiff was charged before the stipendiary magistrate for making a false return in a vaccination certificate. According to the legal representative of the board of guardians, Dr. Evans, after vaccinating a child, had immediately certified that the operation was successful. The defendant was committed to the Glamorgan assizes, personal bail being accepted in a sum of £50.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*: telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*: telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

"R. M. P." writes: Is there any special arrangement amongst the medical practitioners in Letchworth, Herts, with regard to the conduct of private practice in that town?

*** No information as to any such special arrangements has reached us.

DISEASES OF THE NAILS.

"H. R. H." asks for advice as to a textbook on diseases of the nails; most of the dermatology books give only brief outlines. He asks also for suggestions as to treatment for splitting of the nails in a healthy middle-aged woman in whom there is no suggestion of gout. The nail from the lunule to the extremity suddenly becomes painful to the touch, then a red streak appears, which in a day or two forms a distinct fissure. This occurs from time to time in different nails.

*** A good account of disease of the nails may be found in Allbutt's and Rolleston's *System of Medicine*, vol. ix. To suggest remedies for the condition complained of is difficult, as in many cases the affection of the nails is only symptomatic. Probably some benefit would be obtained from the use of an ointment of oil of cade ♏ xx in salicylic acid ointment ʒj. At the same time, mild application of *x*-rays should be given, about one-half pastille or less every two weeks for four exposures.

LETTERS, NOTES, ETC.

NAME FOR ACCESSORY FOOD FACTORS.

DR. JOHN BROWN (Blackpool) writes: The name vitamines was given for the accessory food factors. We know now that the word is absolutely misleading. We need another or alternative name. The following have been suggested: Biogens, biofers, and vitagens; vitafers, vitaids, vitases; vitines, advitants, etc. I have submitted these names to several medical men. The following have been suggested: Biogens, biofers, vitagens, vitaids. At the Cambridge meeting of the British Medical Association, when vitamines were discussed,

I used the word "vitaids." Personally, I believe *biogens* is preferable. It agrees with many words derived from bios, such as biology, bioplasm, biological, biogenetics, biography, etc. It is not too late to adopt a new word.

DELIVERY OF CHILD AND PLACENTA IN UNRUPTURED MEMBRANES AT TERM.

DR. JOHN WISHART (Newcastle-upon-Tyne) writes: Following the memorandum by Dr. J. H. Gilbertson in the BRITISH MEDICAL JOURNAL of October 23rd, I may say that out of 4,000 midwifery cases during the past twenty years I have had only two such cases as detailed by him. Is it possible that Nature, at one time, delivered all cases in unruptured membranes, and that the present procedure of rupturing membranes at the end of the first stage is wrong?

A NEEDLE IN A SEMILUNAR CARTILAGE.

DR. JOHN R. HOWITT (St. Joseph's Hospital, Hamilton, Ontario, Canada) writes: The following case seems worthy of record. A man, aged 31, was admitted to hospital for operation for a dislocated left external semilunar cartilage. The patient had been sitting on a piano stool about a month ago when, on turning round, he slightly twisted his knee. A sharp pain came on which lasted nearly a week, and he could scarcely walk. At the same time he noticed a lump which appeared whenever he flexed his knee. Both the pain and the lump recurred again at intervals several times afterwards. He was operated upon by Dr. Olmsted, and the cartilage was removed. Buried in the cartilage itself and also projecting in part into the lower surface of the joint was a blackened piece of needle about 1½ inches long. The patient, on being questioned after the operation, stated that he had a hazy recollection of having swallowed a needle when a child. He was positive no needle had ever penetrated him otherwise; the only conclusion, therefore, is that the needle recovered in the excised cartilage at operation was the one he had swallowed about twenty-five years before.

TUBERCULOSIS.

DR. J. S. PEARSE (Plymouth) writes: In your leading article on this subject on p. 907 you state: "Virgin subjects" (rural dwellers transferred to towns and certain native races) succumb to severe and rapidly fatal forms when first exposed to massive doses at close quarters." Do rural dwellers drink tuberculous milk? Are they more immune to tuberculosis than town dwellers? Why should they not become infected by bovine tuberculosis as the town dwellers are supposed to be?

Here is the history of the family of A. B., the members of which reside in a village in Cornwall. His father and uncles died of tuberculosis. A. B. and his brothers died from tuberculosis, all residing in the same village and neighbourhood. His sisters are all living, over 60 years of age. One is a very stout and big woman, another thin, active, and wiry, subject to rheumatism. A. B. had six sons and four daughters. One son in his twenties came to Plymouth in business, married, and shortly after died from tuberculosis. The youngest son, tall, and apparently healthy and clever, won a school scholarship and went to college. Shortly after he also died of tuberculosis. The remaining four sons reside in the village. One is a very stout man; another very tall, thin, and wiry; the other two are delicate. The four daughters also live at home in the village—all over 30 years of age, are well built, strong, and healthy-looking.

This family of rural dwellers would probably not be described as "virgin subjects," but there are those who would say so, because the two sons who left home died from tuberculosis. But if the bacillary theory is to hold good, they should have been immune to the disease apparently. All the six sons show derangement and irregularity of metabolism and growth, indicating want of co-ordination and activation of the endocrine glands. Would this be attributable to the presence of toxins of tuberculosis in infancy and childhood, or in their father affecting the sperm and germ cells? A curious fact is that the female members of the family appear to have escaped tuberculous infection, or clinical evidence of it.

According to the statement made by Sir Dyce Duckworth, a rheumatic diathesis is inimical to tuberculosis, and it is also stated that an individual who is bald is not likely to contract tuberculosis. It would not be out of place to say that the action of the endocrine glands has an all-powerful effect upon the development and incidence of tuberculosis.

MOTOR SCOOTERS.

IN the BRITISH MEDICAL JOURNAL of November 27th, 1920, under "Queries and Answers," we published a note on motor scooters in which we said that this type of vehicle probably has a future, but that at present it is not possible to speak with confidence. More recently we have had the opportunity of examining a machine called The Whippet, made by Messrs. W. G. C. Hayward and Co. of Beaufort Works, Twickenham. We are inclined to think that under certain conditions and in some practices this scooter may prove of considerable service. In large towns it is possible that the greater dignity in progression conferred by the car may appeal to practitioners. But in the suburbs and in rural areas, especially if the roads are tolerably good, the scooter may well prove useful, whether for habitual use or as accessory to the car, and this view is confirmed by a medical man who is now using one of these scooters. The engine, four-stroke, 1½ h.p., is fitted with an exhaust valve lifter in order to make starting easy. The wheels are broader than usual, and fitted with 18-in. tyres. The frame is very strong and is stated to have carried the weight of three persons. The strength of the frame and the size of the wheels are the main points which suggest greater reliability and usefulness as compared with some of the lighter machines. The seat is well sprung and very comfortable. A speed from three to twenty-five miles per hour is obtainable, and the petrol consumption is stated to be at least 100 miles to the gallon. The mechanism is very simple, and the scooter is said to be able to climb any hill. Economy in initial cost, in upkeep, and in mileage to the gallon of petrol and oil are points in favour of making the vehicle popular, especially in view of the car taxation now coming into force. An objection to the machine is that in rainy weather the rider will need the same sort of protection from wet and mud as is needed by the rider of an ordinary motor bicycle. Further, the greasiness of wood pavements, especially where there are tram lines, will probably render great care necessary in riding. The latter objection, however, applies to all rubber-shod vehicles.

AN IMPROVED EMBEDDING MEDIUM.

DR. C. LOVELL writes from the Pathological Laboratory, Bethlem Royal Hospital: We have recently been using a new embedding medium, which may be of use to some of your readers. One part, by weight, of beeswax, is added to five parts, by weight, of paraffin wax (m.p. 50° C.). The whole is melted together and filtered in the hot air sterilizer. The medium gives excellent results with nerve sections. The beeswax gives sufficient tenacity to prevent any crumbling. The mixture melts at 51° C. to 53° C., and cuts smoothly at any temperature.

CATALOGUES.

WE have received from *X*-Rays, Limited (11, Torrington Place, London, W.C.1), a list of electro-medical appliances with prices, including the most recent models on the British market. Although a sectional catalogue, from which *x*-ray apparatus is excluded, it is most comprehensive, and in its hundred pages will be found described apparatus and accessories for use in electrical methods of testing and treatment, as well as such things as surgical lamps and electric sterilizers.

WE have received from the Edison Swan Electric Company (Limited), of Ponders End, Middlesex, a copy of a new list of "Ediswan" apparatus for obtaining the currents required by the radiologist. The principal feature of the catalogue is a series of induction coils which are described as "jointless section" owing to the principle adopted for the winding. The transformer or interrupterless machine also figures in the list, and there are various interrupters of well-known types, as well as portable accumulators for use where no electrical supply is available, and motor generators for supplying direct current where the mains give an alternating supply. This range of apparatus, together with switchboards mounted on trolleys or otherwise, may be seen in demonstration at the firm's showrooms in Queen Victoria Street, London.

IN these days of high building costs, the value and cheapness of wooden buildings—for example, bungalows, motor-car houses, poultry houses, is often overlooked. The new catalogue of Messrs. T. Bath and Co., 18, Savoy Street, is therefore worthy of reference.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, 38, 39, and 40 of our advertisement columns, and advertisements as to partnerships, assistantships, and locum tenencies at pages 34 and 35.

THE appointments of certifying surgeons at Arundel (Sussex) and Long Buckby (Northampton) are vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line...	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.